

## Monthly Operating Reports

July 2022

---

The following July 2022 operating report was sent to the Ministry of Environment and Climate Change Strategy on September 14, 2022.

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

July 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             | 40.4                          | 35.1   | 37.9   |
| SO <sub>2</sub> | 200                        | 24 hr             | 89.4                          | 96.9   | 96.2   |
| NOx             | 190                        | 24 hr             | 132.2                         | 133.0  | 139.7  |
| THC             | 10                         | 24 hr             | 0.65                          | 0.11   | 0.22   |
|                 |                            |                   | Monthly Average (mg/dscm)     |        |        |
|                 |                            |                   | Unit 1                        | Unit 2 | Unit 3 |
| Opacity (%)     |                            |                   | 0.84                          | 0.31   | 0.71   |
| CO              |                            |                   | 26.8                          | 22.1   | 27.8   |
| THC             |                            |                   | 0.12                          | 0.06   | 0.12   |
| SO <sub>2</sub> |                            |                   | 52.9                          | 66.3   | 55.7   |
| NOx             |                            |                   | 126.0                         | 128.6  | 132.7  |

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. SO<sub>2</sub> – 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                                                                                             |
|--------------|----------|----------------------|----------------------------------------------------------------------------------------------------------|
| 2-Jul 20:30  | 30 min   | 101.4                | Started gas burners, adjusted airflow, modified feed rate.                                               |
| 4-Jul 08:30  | 30 min   | 101.1                | Adjusted airflow, modified feed rate.                                                                    |
| 14-Jul 07:30 | 30 min   | 114.0                | Unit shutdown due to failed thermocouple.                                                                |
| 15-Jul 23:00 | 30 min   | 122.7                | Poor refuse quality, started gas burners, adjusted airflow.                                              |
| 16-Jul 06:30 | 30 min   | 211.6                | Poor refuse quality, started gas burners, adjusted airflow, modified feed rate, checked instrumentation. |
| 23-Jul 07:30 | 30 min   | 138.4                | Forced draft fan trip, started gas burners.                                                              |
| 25-Jul 11:30 | 30 min   | 103.4                | Adjusted airflow, modified feed rate.                                                                    |
| 27-Jul 08:00 | 30 min   | 134.2                | Started gas burners, adjusted airflow, modified feed rate.                                               |
| 28-Jul 04:00 | 30 min   | 162.1                | Adjusted airflow, modified feed rate, checked instrumentation.                                           |
| 29-Jul 16:00 | 30 min   | 364.9                | Unit shutdown, started gas burners.                                                                      |
| 31-Jul 11:00 | 30 min   | 107.0                | Feeder hang up, 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                                                                                             |
|--------------|----------|----------------------|----------------------------------------------------------------------------------------------------------|
| 1-Jul 13:30  | 30 min   | 136.2                | Poor refuse quality, started gas burners, adjusted airflow, modified feed rate, checked instrumentation. |
| 2-Jul 15:30  | 30 min   | 108.1                | Started gas burners, adjusted airflow, modified feed rate.                                               |
| 22-Jul 08:00 | 30 min   | 104.9                | No action required                                                                                       |
| 28-Jul 17:00 | 30 min   | 113.5                | 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                                                                                             |
|--------------|----------|----------------------|----------------------------------------------------------------------------------------------------------|
| 1-Jul 13:00  | 30 min   | 114.7                | Poor refuse quality, started gas burners, adjusted airflow, modified feed rate, checked instrumentation. |
| 4-Jul 08:30  | 30 min   | 217.1                | Started gas burners, adjusted airflow, modified feed rate.                                               |
| 7-Jul 06:30  | 30 min   | 109.9                | Adjusted airflow.                                                                                        |
| 11-Jul 10:30 | 30 min   | 134.8                | Started gas burners, adjusted airflow, modified feed rate, checked instrumentation.                      |

**Compliance Parameter: Nitrogen Oxide**  
**Response Limit: 350 mg/dscm 1/2 hour average**  
**Unit No. 2**

| Date / Time  | Duration | Exceedance (mg/dscm) | Action Taken                                    |
|--------------|----------|----------------------|-------------------------------------------------|
| 28-Jul 10:30 | 30 min   | 534.6                | Instrumentation error, recalibrated O2 monitor. |

**Compliance Parameter: Opacity**  
**Response Limit: 5% 1/2 hour average**  
**Unit No. 2**

| Date / Time | Duration | Exceedance (mg/dscm) | Action Taken                                                                            |
|-------------|----------|----------------------|-----------------------------------------------------------------------------------------|
| 1-Jul 13:30 | 30 min   | 15.3                 | Visually inspected stack, purple plume, lowered boiler steam load, started gas burners. |

**Compliance Parameter: Total Hydrocarbons**  
**Response Limit: 20 mg/dscm 1/2 hour average**  
**Unit No. 2**

| Date / Time  | Duration | Exceedance (mg/dscm) | Action Taken                                    |
|--------------|----------|----------------------|-------------------------------------------------|
| 28-Jul 10:30 | 30 min   | 72.3                 | Instrumentation error, recalibrated O2 monitor. |

## 2.c. Transient Conditions

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

| Unit                                            | Duration | Date | Time |  |
|-------------------------------------------------|----------|------|------|--|
|                                                 |          |      |      |  |
| Cause                                           |          |      |      |  |
|                                                 |          |      |      |  |
| Action Taken to Restore Steady State Conditions |          |      |      |  |
|                                                 |          |      |      |  |
| Remedial Action Planned and/or Taken            |          |      |      |  |
|                                                 |          |      |      |  |

## 3. CEMS Availability

| Analyzer        | Required Availability<br>(% hours per quarter) | Averaging Period | Monthly Availability |        |        |
|-----------------|------------------------------------------------|------------------|----------------------|--------|--------|
|                 |                                                |                  | Unit 1               | Unit 2 | Unit 3 |
| Opacity         | 90                                             | Hour             | 100                  | 100    | 100    |
| Oxygen          | 90                                             | Hour             | 98                   | 98     | 98     |
| CO              | 90                                             | Hour             | 98                   | 98     | 98     |
| SO <sub>2</sub> | 90                                             | Hour             | 98                   | 98     | 98     |
| NOx             | 90                                             | Hour             | 98                   | 98     | 98     |
| THC             | 90                                             | Hour             | 98                   | 98     | 98     |
| Stack Flow      | 90                                             | Hour             | 98                   | 98     | 98     |

## 4. Shutdown Report

### Unit 1

| Duration in Hours | Reason                        | Date    |
|-------------------|-------------------------------|---------|
| 0.52              | Siftings flap plugged         | July 5  |
| 1.73              | Fabric filter bag inspection  | July 8  |
| 6.86              | Thermocouple malfunction      | July 14 |
| 1.00              | Fabric filter bag inspection  | July 20 |
| 2.13              | Fabric filter bag replacement | July 20 |
| 1.17              | Fabric filter bag inspection  | July 21 |
| 17.67             | Fabric filter bag replacement | July 22 |
| 3.00              | Ash Discharger plugged        | July 28 |
| 0.50              | Grate inspection              | July 29 |

### Unit 2

| Duration in Hours | Reason                                   | Date    |
|-------------------|------------------------------------------|---------|
| 0.55              | Fabric filter bag inspection/replacement | July 16 |
| 0.33              | Forced draft fan trip                    | July 31 |

### Unit 3

| Duration in Hours | Reason                                   | Date    |
|-------------------|------------------------------------------|---------|
| 0.47              | Drum level transmitter failure           | July 12 |
| 0.45              | Fabric filter bag inspection             | July 17 |
| 1.30              | Fabric filter bag inspection/replacement | July 19 |
| 1.83              | Fabric filter bag inspection/replacement | July 19 |

## **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                | 18,824 |        |        |
| Waste Processed         | tonnes/day            | 233    | 236    | 240    |
| Maximum Waste Processed | tonnes/day            | 249    | 244    | 249    |
|                         |                       |        |        |        |
| Natural Gas Consumed    | m <sup>3</sup> /day   | 1,710  |        |        |
|                         | m <sup>3</sup> /month | 52,998 |        |        |
| Fly ash disposed        | tonnes                | 850    |        |        |
| Bottom ash disposed     | tonnes                | 3,234  |        |        |

## **7. Complaints and Responses**

| Date/Time | Complaint | Action Taken |
|-----------|-----------|--------------|
|           |           |              |

## July 2022 - Monthly CEMS Data

|         | Boiler #1 |                |                      |                      |                      |                      |         |         | Boiler #2 |                |                      |                      |                      |                      |         |         | Boiler #3 |                |                      |                      |                      |                      |         |         |
|---------|-----------|----------------|----------------------|----------------------|----------------------|----------------------|---------|---------|-----------|----------------|----------------------|----------------------|----------------------|----------------------|---------|---------|-----------|----------------|----------------------|----------------------|----------------------|----------------------|---------|---------|
|         | Stack     | O <sub>2</sub> | SO <sub>2</sub>      | NO <sub>x</sub>      | CO                   | THC                  | Opacity | Furnace | Stack     | O <sub>2</sub> | SO <sub>2</sub>      | NO <sub>x</sub>      | CO                   | THC                  | Opacity | Furnace | Stack     | O <sub>2</sub> | SO <sub>2</sub>      | NO <sub>x</sub>      | CO                   | THC                  | Opacity | Furnace |
| Date    | Temp      | (%)            | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (%)     | Temp    | Temp      | (%)            | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (%)     | Temp    | Temp      | (%)            | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (mg/m <sup>3</sup> ) | (%)     | Temp    |
| 7/1/22  | 151       | 9.4            | 63.8                 | 128.4                | 24.2                 | 0.00                 | 1.21    | 939     | 139       | 10.1           | 54.5                 | 127.8                | 22.5                 | 0.11                 | 0.65    | 940     | 150       | 9.1            | 67.7                 | 132.1                | 28.4                 | 0.09                 | 0.65    | 910     |
| 7/2/22  | 151       | 9.4            | 82.8                 | 127.6                | 21.7                 | 0.07                 | 1.25    | 936     | 137       | 10.1           | 89.8                 | 127.6                | 24.4                 | 0.07                 | 0.24    | 939     | 150       | 8.9            | 96.2                 | 129.8                | 25.6                 | 0.06                 | 0.77    | 923     |
| 7/3/22  | 152       | 9.3            | 89.4                 | 125.1                | 18.9                 | 0.04                 | 1.74    | 940     | 138       | 10.1           | 62.7                 | 127.5                | 21.1                 | 0.10                 | 0.52    | 947     | 150       | 9.1            | 80.2                 | 129.3                | 28.9                 | 0.07                 | 0.88    | 924     |
| 7/4/22  | 153       | 9.1            | 43.2                 | 124.4                | 31.9                 | 0.05                 | 1.70    | 926     | 139       | 10.1           | 26.5                 | 126.6                | 28.8                 | 0.07                 | 0.80    | 912     | 152       | 8.8            | 54                   | 129.6                | 37                   | 0.06                 | 0.81    | 916     |
| 7/5/22  | 153       | 9.2            | 57.3                 | 128                  | 26.3                 | 0.06                 | 1.65    | 928     | 138       | 10.1           | 24.8                 | 126.9                | 22.2                 | 0.04                 | 0.38    | 913     | 153       | 9.4            | 58.1                 | 131.8                | 28.3                 | 0.10                 | 0.78    | 916     |
| 7/6/22  | 154       | 9.4            | 39.9                 | 127                  | 29.6                 | 0.07                 | 1.69    | 930     | 139       | 10.6           | 38.5                 | 127.5                | 20.5                 | 0.05                 | 0.38    | 910     | 154       | 9.4            | 50.5                 | 133                  | 29.5                 | 0.16                 | 0.75    | 925     |
| 7/7/22  | 154       | 9.5            | 49.4                 | 126.7                | 25.7                 | 0.04                 | 1.94    | 920     | 140       | 10.4           | 67.8                 | 127.7                | 19.4                 | 0.06                 | 0.35    | 917     | 154       | 9.6            | 56.2                 | 133                  | 37.9                 | 0.13                 | 0.80    | 926     |
| 7/8/22  | 152       | 9.5            | 45.3                 | 129.2                | 18.7                 | 0.04                 | 1.52    | 910     | 140       | 10.5           | 55.9                 | 127.9                | 20.5                 | 0.04                 | 0.18    | 924     | 153       | 11.6           | 48                   | 139.7                | 27.4                 | 0.16                 | 0.79    | 916     |
| 7/9/22  | 149       | 9.7            | 52.5                 | 124.2                | 25.3                 | 0.05                 | 0.84    | 919     | 144       | 10.5           | 96.9                 | 133                  | 25                   | 0.05                 | 0.39    | 926     | 151       | 11.4           | 62.8                 | 135.6                | 32.3                 | 0.15                 | 0.86    | 907     |
| 7/10/22 | 153       | 9.2            | 57.1                 | 126                  | 15.3                 | 0.04                 | 0.89    | 921     | 144       | 10.4           | 85.6                 | 132.1                | 31.1                 | 0.08                 | 0.44    | 931     | 152       | 9.6            | 58.9                 | 132.1                | 25.7                 | 0.14                 | 0.85    | 920     |
| 7/11/22 | 154       | 9.6            | 41                   | 124.5                | 25.2                 | 0.06                 | 0.94    | 919     | 142       |                |                      |                      |                      |                      | 0.30    | 931     | 153       | 9.3            | 40.3                 | 131.9                | 28.8                 | 0.13                 | 0.80    | 911     |
| 7/12/22 | 152       |                |                      |                      |                      |                      | 0.96    | 919     | 140       | 10.2           | 61.1                 | 128.7                | 24.5                 | 0.03                 | 0.15    | 929     | 151       | 9.7            | 52.8                 | 133.5                | 29.1                 | 0.15                 | 0.79    | 900     |
| 7/13/22 | 150       | 9.9            | 45.7                 | 126.2                | 23.5                 | 0.05                 | 0.92    | 919     | 138       | 10.2           | 72.4                 | 129.8                | 19.6                 | 0.05                 | 0.03    | 921     | 149       |                |                      |                      |                      |                      | 0.89    | 923     |
| 7/14/22 |           |                |                      |                      |                      |                      |         |         | 141       | 9.7            | 70.7                 | 128.3                | 15.1                 | 0.04                 | 0.26    | 930     | 152       | 8.6            | 46.6                 | 133.9                | 31.8                 | 0.10                 | 0.94    | 918     |
| 7/15/22 | 150       | 9.5            | 59.4                 | 127.3                | 25.3                 | 0.13                 | 0.99    | 916     | 143       | 9.8            | 74.2                 | 130.3                | 22.7                 | 0.05                 | 0.35    | 937     | 151       | 9.1            | 58.1                 | 133.9                | 28.2                 | 0.14                 | 0.84    | 912     |
| 7/16/22 | 150       | 9.4            | 51.8                 | 126.8                | 30                   | 0.05                 | 0.98    | 920     | 142       | 9.7            | 70.8                 | 128                  | 22.6                 | 0.05                 | 0.42    | 954     | 151       | 9              | 45.5                 | 130.5                | 26.9                 | 0.14                 | 0.55    | 932     |
| 7/17/22 | 151       | 9.4            | 43.6                 | 121.1                | 27.4                 | 0.07                 | 1.00    | 921     | 143       | 9.8            | 69                   | 128.1                | 22.6                 | 0.08                 | 0.61    | 944     | 153       | 9.1            | 47.3                 | 130.7                | 25                   | 0.12                 | 0.53    | 919     |
| 7/18/22 | 154       | 9.7            | 40.4                 | 123.3                | 32.9                 | 0.07                 | 1.31    | 917     | 145       | 10.4           | 74.5                 | 129.4                | 20.2                 | 0.05                 | 1.06    | 903     | 153       | 9              | 55                   | 135.9                | 24.9                 | 0.09                 | 0.61    | 900     |
| 7/19/22 | 151       | 9.6            | 46.7                 | 126.7                | 23.6                 | 0.02                 | 1.35    | 923     | 143       | 10.2           | 79                   | 129.9                | 18.8                 | 0.04                 | 0.58    | 933     | 154       | 9.4            | 54.5                 | 133.7                | 26.1                 | 0.12                 | 0.56    | 901     |
| 7/20/22 | 150       | 10             | 34.7                 | 124.9                | 24.1                 | 0.06                 | 0.64    | 918     | 143       | 10.2           | 66.1                 | 131                  | 13.3                 | 0.03                 | 0.43    | 921     | 152       | 9.4            | 45.1                 | 132.1                | 24.7                 | 0.11                 | 0.50    | 907     |
| 7/21/22 | 152       | 9.9            | 50.6                 | 132.2                | 22.2                 | 0.05                 | 0.33    | 930     | 145       | 10.2           | 69.8                 | 128.5                | 19                   | 0.09                 | 0.36    | 936     | 152       | 9.5            | 59.1                 | 135.3                | 23                   | 0.16                 | 0.58    | 920     |
| 7/22/22 |           |                |                      |                      |                      |                      |         |         | 144       | 10.3           | 66.3                 | 131.9                | 23                   | 0.06                 | 0.52    | 914     | 151       | 9.2            | 53                   | 132.4                | 28.3                 | 0.09                 | 0.62    | 920     |
| 7/23/22 | 157       | 10             | 64.5                 | 126.8                | 31.6                 | 0.10                 | 0.05    | 942     | 143       | 10.4           | 75                   | 128.4                | 16.1                 | 0.04                 | 0.10    | 946     | 153       | 9.3            | 69.5                 | 133.9                | 25.5                 | 0.09                 | 0.67    | 925     |
| 7/24/22 | 157       | 10             | 63.5                 | 125.7                | 25.3                 | 0.08                 | 0.02    | 935     | 142       | 10.2           | 66.7                 | 129                  | 19.6                 | 0.06                 | 0.12    | 928     | 154       | 8.9            | 58.6                 | 133.4                | 22.1                 | 0.07                 | 0.65    | 923     |
| 7/25/22 | 157       | 9.7            | 42.2                 | 127.3                | 25.5                 | 0.17                 | 0.00    | 933     | 143       | 10.1           | 53.6                 | 127.7                | 20.5                 | 0.03                 | 0.07    | 919     | 152       | 8.9            | 40.8                 | 131.1                | 27.2                 | 0.08                 | 0.54    | 925     |
| 7/26/22 | 157       | 9.6            | 59.7                 | 126.8                | 29.7                 | 0.05                 | 0.03    | 957     | 143       | 10             | 74.5                 | 129.3                | 21.6                 | 0.07                 | 0.00    | 952     | 153       | 9              | 54.6                 | 135.6                | 30.9                 | 0.13                 | 0.64    | 935     |
| 7/27/22 | 156       | 9.5            | 48.2                 | 126.2                | 36.8                 | 0.10                 | 0.04    | 957     | 143       | 10.1           | 66.6                 | 128.9                | 23.5                 | 0.07                 | 0.00    | 968     | 152       | 9              | 53                   | 135.3                | 27                   | 0.18                 | 0.69    | 926     |
| 7/28/22 | 156       | 10             | 44.3                 | 124.1                | 38.4                 | 0.15                 | 0.09    | 937     | 145       | 10.4           | 62.5                 | 128                  | 35.1                 | 0.09                 | 0.01    | 965     | 153       | 9              | 46.8                 | 131.5                | 22                   | 0.14                 | 0.69    | 926     |
| 7/29/22 | 156       | 10.1           | 53.8                 | 125.1                | 40.4                 | 0.48                 | 0.10    | 940     | 143       | 10.7           | 66.6                 | 125                  | 26                   | 0.10                 | 0.01    | 931     | 152       | 9.1            | 53.9                 | 129.6                | 30.2                 | 0.13                 | 0.69    | 918     |
| 7/30/22 | 157       | 9.9            | 60.1                 | 125.1                | 20.7                 | 0.52                 | 0.10    | 940     | 143       | 10.5           | 76                   | 127.1                | 22.4                 | 0.06                 | 0.01    | 961     | 152       | 9.1            | 48.8                 | 129.9                | 25.1                 | 0.14                 | 0.66    | 921     |
| 7/31/22 | 158       | 10.1           | 51.2                 | 122.6                | 30.9                 | 0.65                 | 0.13    | 908     | 145       | 10.6           | 70.4                 | 125.3                | 21.5                 | 0.06                 | 0.00    | 931     | 154       | 9              | 56.1                 | 129.6                | 25.8                 | 0.22                 | 0.76    | 909     |
| Average | 153       | 9.6            | 52.9                 | 126.0                | 26.8                 | 0.12                 | 0.84    | 928     | 141.8     | 10.2           | 66.3                 | 128.6                | 22.1                 | 0.06                 | 0.31    | 932.7   | 152.1     | 9.3            | 55.7                 | 132.7                | 27.8                 | 0.12                 | 0.71    | 917.9   |
| Min     | 149       | 9.1            | 34.7                 | 121.1                | 15.3                 | 0.00                 | 0.00    | 908     | 137.0     | 9.7            | 24.8                 | 125.0                | 13.3                 | 0.03                 | 0.00    | 903.0   | 149.0     | 8.6            | 40.3                 | 129.3                | 22.0                 | 0.06                 | 0.50    | 900.0   |
| Max     | 158       | 10.1           | 89.4                 | 132.2                | 40.4                 | 0.65                 | 1.94    | 957     | 145.0     | 10.7           | 96.9                 | 133.0                | 35.1                 | 0.11                 | 1.06    | 968.0   | 154.0     | 11.6           | 96.2                 | 139.7                | 37.9                 | 0.22                 | 0.94    | 935.0   |
| St Dev  | 2.7       | 0.29           | 12.37                | 2.16                 | 5.91                 | 0.16                 | 0.63    | 12.4    | 2.38      | 0.26           | 15.59                | 1.82                 | 4.35                 | 0.02                 | 0.26    | 16.32   | 1.34      | 0.65           | 11.36                | 2.41                 | 3.68                 | 0.04                 | 0.12    | 8.90    |

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.