

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N384564860

FACILITY: EAGLE VALLEY RECYCLE AND DISPOSAL FACILITY		SRN / ID: N3845
LOCATION: 600 W. SILVER BELL RD., ORION TWP		DISTRICT: Warren
CITY: ORION TWP		COUNTY: OAKLAND
CONTACT: David Rogers , Responsible Official		ACTIVITY DATE: 09/21/2022
STAFF: Robert Joseph	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspection of municipal landfill		
RESOLVED COMPLAINTS:		

On September 21, 2022, I, Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) staff Robert Joseph, conducted a scheduled inspection of Eagle Valley Recycle and Disposal Facility (SRN: N3845) located at 600 West Silver Road, Orion Township, Michigan 48359. The purpose of the inspection was to determine the facility's compliance with the requirements of the Federal Clean Air Act Part 55 - Air Pollution Control, Natural Resources and Environmental Protection Act - 1994 PA 451, Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) Administrative Rules, and conditions of the facility's Renewable Operating Permit (ROP) MI-ROP-N3845-2022.

Opening Introduction

I arrived at the facility shortly after 10 a.m. and met with Jason Mabe, Engine Plant Lead Worker, and Richard Kunze, Landfill Gas Engine Supervisor. I introduced myself and presented my identification and credentials and stated the purpose of my visit. Eagle Valley Recycle is a subsidiary of Waste Management Renewable Energy (WMRE) of Michigan, Inc. The hours of operation of the facility are 6am-5pm daily. The facility began operations in 1986.

The facility is a Type II Sanitary Landfill which is a discrete area of land that receives household waste. It also receives other types of non-hazardous wastes such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, construction and demolition debris and industrial nonhazardous solid waste.

Eagle Valley is subject to the National Standards of Performance for Municipal Solid Waste Landfills (NSPS) - 40 CFR Part 60 Subpart XXX, due to the expansion of the facility in May 2019 which permitted additional landfill cells. The landfill became subject to the NSPS - 40 CFR Part 60, Subpart XXX, in November 2019. These regulations are applicable to landfills that have commenced construction, reconstruction, or modification after July 17, 2014.

The facility is also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills, 40 CFR Part 63 - Subpart AAAA.

Both the NSPS and NESHAP share similar regulations with some slight differences. The NESHAP allows landfills more flexibility with gas collection operations, however, additional monitoring and reporting are required to remain compliant. The facility chose to opt-in to the operational standards, compliance provisions, and monitoring of operations of the modified NESHAP (AAAA) over the NSPS (XXX) in July 2021, however, the facility remains subject to the remaining sections of both.

The facility has two enclosed flares for combustion of the landfill gas (4,000 ft³/min and 1,000 ft³/min), and two spark ignition, lean burn, reciprocating internal combustion engines

(Caterpillar G3520C, 2,233 bhp at 100% load) for combusting treated landfill gas to produce electricity (1.6 MW gross electrical output). The engines drive an associated generator set to produce electricity. The facility is a major source of Hazardous Air Pollutants (HAPs). The facility's engines are subject to the National Emission Standards for Hazardous Air Pollutant (NESHAP) for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 - Subpart ZZZZ, and the National Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, 40 CFR Part 60 - Subpart JJJJ.

Facility Tour

The landfill gas (LFG) is collected through an active landfill gas collection system, which consists of wells, headers, and gas mover equipment. Risers are also installed to tie-in the gas wells. The collected LFG can be sent to one of the two facility flares for combustion, sent to the facility's gas-to-energy engine plant (which is utilized by DTE energy), or sold off-site to the General Motors (GM) Orion Assembly Plant for combustion in their boilers/engines.

The site currently has 14 active landfill cells with 175 gas wells in operation. The 14 active landfill cells comprise 129.2 acres. In addition, there are three cells that are unconstructed which will add additional 18.6 acres. The total landfill area, active and unconstructed is 147.8 acres. Six acres are used for conservation easement and 32.4 acres are currently under final cover. All cells that are covered have 2-synthetic liners except for cell 1.

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The facility has permit conditions for the following Emission Units: EU-ABESTOS, EU-LANDFILL, EU-ACTIVECOLLECTION, EU-TREATMENTSYSYSTEM 1 and 2, EU-ENCLOSEDFLARE 3 and 4, EU-ICENGINE 1 and 2.

These flexible groups have permit conditions: FG-LANDFILL-XXX/AAAA, FG-ACTIVECOLLECTION-XXX/AAAA, FG-TREATMENTSYSYSTEM-XXX/AAAA, FG-ENCLOSEDFLARES-XXX/AAAA, FG-ICENGINES, FG-RICEMACT.

EU-ASBESTOS

The facility accepts friable asbestos waste but has not done so in over the last two years. When previously received, it is documented its location via GPS (Global Positioning System).

III. PROCESS/OPERATIONAL RESTRICTION(S)

Given that the facility has not received asbestos in over two years, I did not detect any asbestos fugitive emissions while on-site. The facility places topsoil and aggregate materials over the asbestos area daily and uses a petroleum-based cover to minimize dust generation.

IV. DESIGN/EQUIPMENT PARAMETERS

The facility stated there are no areas in the landfill where asbestos is placed by itself as it is placed in active waste cell areas with other waste. Its location is documented to prevent unnecessary disturbance or damage to the waste during future construction.

VI. MONITORING/RECORDKEEPING

When received, the facility maintains waste shipment records of all asbestos containing waste received. It lists the name, address and phone number of the waste generator and transporter. The location, depth, and quantity of asbestos containing waste is also documented. There are no asbestos containing areas excluded from gas collection. No manifests were reviewed given that that facility has not accepted any asbestos in over two years.

FG-LANDFILL-XXX/AAAA

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario
1. Methane (CH ₄)	Less than 500 ppm above background level	Calendar quarter

There were three locations that initially exceeded 500 ppm methane during the 1st quarter Surface Emissions Monitoring (SEM) performed on March 9 and March 17, 2021. There were also three locations that exceeded 500 ppm methane during the 2nd quarter scan performed on June 4 and June 24, 2021. The facility stated the applied wellfield vacuum was increased and PVC skirts were installed to well casings to correct the exceedances. There was no expansion of wellfield during this reporting period.

There were nine locations that initially exceeded 500 ppm during the 3rd quarter scan, and six locations that exceeded 500 ppm during the 4th quarter scan. The facility states all locations were successfully remediated upon re-monitoring.

The 1st quarter monitoring event in 2022 was conducted on March 16. 24 locations exceeded the 500-ppm methane regulatory standard. Re-monitoring results indicate that corrective actions (additional cover and vacuum increases) were effective at reducing surface emissions to below the regulatory standard. The 2nd quarter monitoring event was conducted on April 14, 2022. There were no locations that exceeded the 500-ppm methane regulatory standard.

III. PROCESS/OPERATIONAL RESTRICTIONS

The facility has provided a SSM plan describing how emissions will be minimized during periods of startup, shutdown, and malfunction. According to facility's records, there were 12 gas collection and control system (GCCS) start-up events, eight shutdown events, and four malfunction events due to power outages that occurred during the first half of 2021. All events were consistent with the facility's SSM plan.

There were nine gas collection and control system (GCCS) start-up events, two shutdown events, and seven malfunction events due to power outages that occurred during the second half of 2021. All events were consistent with the facility's SSM plan.

The facility is longer required to submit an SSM report since they've opted-in to the modified NESHAP regulations which require landfills to now comply with the SSM work practices at all times to minimize emissions. The facility monitors all events via monthly records and the

corrective actions taken are documented. The facility did not report any occurrences that were not consistent with the SSM plan.

IV. DESIGN/EQUIPMENT PARAMETERS

The facility maintains two enclosed flares, 3 and 4, and they are designed in accordance with 40 CFR part 60.18. The facility's treatment system is outlined in the preventative maintenance plan listing the operating parameters and maintenance schedule. The landfill has a network of wells, pipes, and a blower system to capture the landfill gas.

V. TESTING/SAMPLING

The facility performs quarterly scans of the landfill, and the results and exceedances are documented in the facility's NESHAP reports along with the corrective actions taken for any exceedance.

VI. MONITORING/RECORDKEEPING

The facility observes the cover integrity of the gas well collection system on a monthly basis and intermittently each week. The facility maintains on-site records of the design capacity for the current amount of solid waste in place and the year-by-year waste acceptance rate via the LandGem software.

The facility accepted 433,112 tons in 2021. The facility has not converted design capacity from volume to mass or mass to volume and does not add any liquids in a controlled fashion to the waste mass.

VI. REPORTING

The facility has submitted the semi-annual, annual, and liquids reports notification as required per the facility's ROP, NSPS, and NESHAP reporting requirements.

IX. OTHER REQUIREMENTS

The facility has not expanded or installed the gas collection system in a manner not consistent with the design plan or regulations.

FG-ACTIVECOLLECTION-XXX/AAAA

III. PROCESS/OPERATIONAL RESTRICTIONS

The facility operates the gas collection system for all waste that has been in-place for five years. There are 175 gas wells in operation. Facility equipment includes blowers, vertical wells, horizontal wells, and risers. There have not been any documented events of a fire. The facility uses a two synthetic liner cover for its gas collection system.

In the second half of 2021 there was one well that exceeded the pressure limitation and none for temperature. There were no instances when the entire collection system was not in operation in excess of five days. The facility installed two new gas wells along with an associated header line and there were 22 gas collectors that were also decommissioned.

The facility failed to provide notification (no later than 75-days of the initial exceedance) of a gas well pressure exceedance that was not corrected within 60 days, as well the decommissioning of nine gas wells per 40 CFR 63.1981(d)(2). 40 CFR 63.1958(b)(3) requires the decommissioning of gas wells to be approved by the AQD via 40 unless a gas collection and control system design plan is approved. The AQD has not approved the design plan (deviations from the NSPS and NESHAP), therefore, the decommissioning of gas wells must be approved/reviewed by the AQD. The AQD informed the facility that a violation notice would not be issued at that time, however, future occurrences will result in multiple violation notices being issued if the facility fails to provide proper notification.

The facility states there were no gas wellfield field exceedances or enhanced monitoring in the first half of 2022. The facility expanded the gas wellfield with the addition of 10 gas wells as well as other GCCS expansions such as pumps, vacuum laterals, and well tuning efforts. The GCCS was never down for more than five days, and no enhanced monitoring was conducted during this reporting period.

Facility records indicate that the wellfield operates in a manner that should the gas collection or control system become inoperable, the gas mover system shuts down and all valves in the gas collection and control system contributing to venting of the gas to the atmosphere are closed within 1 hour per the Startup, Shutdown, and Malfunction plan. There have not been any such events that were not consistent with the plan and the facility has not reported any exceedances.

The facility operates the gas collection system for all waste that has been in-place for five years. There are approximately 175 gas wells currently in-operation, and there have not been any documented events of a fire or positive pressure occurring within the collection system other than one well during the second half of 2021.

The facility is required to operate each interior wellhead in the collection system with a landfill gas temperature less than 62.7°C (145°F) - under negative pressure, per the NESHAP regulations given that they opted into the modified regulations in July 2021.

IV. DESIGN/EQUIPMENT PARAMETERS

The facility operates the gas collection system for all waste that has been in-place for five years and monitors the wellfield, and if necessary, makes adjustments to handle the gas flow rate by either adjusting the parameters of a specific well, increasing the vacuum on the wellfield, or installing additional wells or risers. Collected landfill gas is sent either to the facility's flares for combustion, sent to the facility's gas-to-energy engine plant (which is utilized by DTE energy), or sold off-site to the GM Orion Assembly Plant for combustion in their boilers/engines.

The facility has installed a series of horizontal, vertical, and horizontal wells capable of controlling and extracting the landfill gas, and each gas well is equipped with a sample port and thermometer to measure the subsurface temperature (Subparts XXX and AAAA). The facility submits their gas collection control system designs plans to the EGLE-MMD for approval which is also reviewed by the EGLE-AQD.

The facility accepts asbestos waste but has not done so in over two years (previous areas are documented) and there are no documented areas that are excluded from gas control.

VI. MONITORING/RECORDKEEPING

The facility measures gauge pressure and temperature in the gas collection header at each individual well monthly and daily as needed. The facility is required to submit a root cause analysis, corrective action plan, and implementation timeline (beginning and end date) for all exceedances expected to exceed 120-days. Notifications for this are required no later than 75-days. In addition, notifications are required if corrective actions are not completed within 60-days per Subpart AAAA and must be submitted no later than 75-days from initial exceedance. The facility has not conducted enhanced monitoring due to gas well temperatures.

The facility maintains on file the manufacture control equipment information and is collecting landfill gas at approximately 3800 ft³/min. There was no time-period when the entire system was not in operation in excess of five days. There were ten new wells installed during the 1st half of 2022, along with the associated header and lateral conveyance piping, air and force mains, and liquid extraction pumps.

The facility maintains a diagram of all vertical wells, horizontal wells and other gas extraction devices. The facility maintains an up-to-date plot showing each existing and planned collector in the system and maintains the dates of the newly installed collectors. Records were reviewed for recent new collectors installed during 2021 and 2022. The wellfield density is based on the waste acceptance rates and expected gas generation.

The facility maintains test wells outside the limits of waste to measure methane concentrations detected off-site. Dates of the landfill gas well installations are maintained within the facility's database, and the age of the waste in which the landfill gas wells were installed is also documented. All asbestos is placed in marked locations within the landfill and documented, and there are no waste areas where gas collectors are excluded.

The present gas mover equipment is adequate to handle the gas flow rates. Existing cell #1 is the largest permitted site at 25.7 acres and has been in place since the facility began operations in 1986. Existing cell #7 is the smallest permitted site at 5.0 acres and has been in-place since 1997.

VI. REPORTING

The facility has submitted the semi-annual, annual, and liquids reporting notification as required per the facility's ROP, NSPS, and NESHAP reporting requirements.

FG-TREATMENTSYSTEM-XXX/AAAA

This emission unit treats landfill gas before it is sold for use to DTE via the facility's two engines or sent to the GM Orion Assembly Plant. The treatment system removes particulate to at least the 10 microns and compresses the gas. In addition, enough moisture is removed to ensure good combustion of gas so the destruction of the NMOC will be maintained.

III. PROCESS/OPERATIONAL RESTRICTION(S)

There are no atmospheric vents associated with Eagles Valley's treatment system. The facility operates the treatment system at all times and there were no occurrences when the system was down for more than one hour in 2021 and thus far in 2022. A site-specific

monitoring plan has been submitted by the facility which outlines the treatment system's processes and monitoring protocols, as well as the responsible individual who oversees each occurrence.

The facility maintains an alarm system which shuts down in the event the gas stream temperature downstream of the post-compression air-to-air cooler exceeds 120 degrees F. In addition, in the event the collection or control system is inoperable, the gas mover system is shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere is closed within one hour.

IV. DESIGN/EQUIPMENT PARAMETER(S)

The treatment system appears to operate according to the NESHAP regulations. The facility has installed a device to continuously measure gas flow to the treatment system and it was last calibrated in March 2021, and there are no bypass lines within the system.

VI. MONITORING/RECORDKEEPING

Per facility records and the semi-annual reports, there have not been any control or treatment exceedances or records which indicate that an alarm event occurred regarding the gas stream temperature. There have not been any control or treatment exceedances, and the facility maintains records of all maintenance activities per the preventative maintenance plan (PMP).

The facility does not have a bypass of the control system so landfill gas is not discharged directly to the ambient air. Records indicate flow to the treatment system ranges between 3,000 and 4,200 ft³/min and was operating in that range at the time of inspection.

VI. REPORTING

The facility has submitted the semi-annual, annual, and liquids reporting notification as required per the facility's ROP, NSPS, and NESHAP with the reporting requirements.

FG-ENCLOSEDFLARES-XXX/AAAA

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Test Result
. NMOC	NMOC by 98 weight-percent or reduce the outlet NMOC concentration to less than 20 ppm by volume, dry basis as hexane at 3 percent oxygen	Hourly	Each flare	Flare 3 0.26 ppm Flare 4 0.24 ppm
. CO	24.3 pph ₂	Hourly	Flare 3	0.24
. CO	6.1 pph ₂	Hourly	Flare 4	0.24
. SO ₂	109 tpy ₂	12-month rolling time period as	Combined totals for flares	26.66 tons/yr

determined at the
end of each
calendar month

The above emission limits apply to the facility's two enclosed flares, flare 3 (4,000 ft³/min) and flare 4 (1,000 ft³/min). The flares were last tested on September 21-23, 2021. Flare 3 measured to have a combustion chamber temperature of 1,596 F with an NMOC emission limit of 0.26 ppm, flare 4 measured to have a combustion chamber temperature of 1,600 F with an NMOC emission rate of 0.24 ppm. Both flares measured less than 20 ppm by volume (dry hexane C₆ at 3% O₂). The SO₂ emissions is the current 12-month rolling total.

III. PROCESS/OPERATIONAL RESTRICTION(S)

The facility has implemented and maintains a MAP for the flares. The MAP identifies the equipment covered along with the inspection/service frequency and replacement parts maintained in inventory. Inspection records are maintained electronically and saved to the facility's network drive. In addition, hardcopy records are maintained in a logbook stored on-site.

Landfill gas is routed to the flares when there is a surplus of gas available after it has been routed to the facility's gas engines and the GM Orion plant when operating. These flares are designed to reduce NMOC by 98% per Subparts XXX and AAAA and the data recorder downloads the operating parameters every five minutes. The flares appear to operate within the parameter ranges established during the most recent performance test. Each flare was operating at over 1600 F at the time of inspection.

IV. DESIGN/EQUIPMENT PARAMETER(S)

Flare 3 and 4 were last calibrated on March 1, 2021. The Golder Watch system monitors flow to the control device every five minutes and no bypass system exists. Each flare is also equipped with a temperature monitoring device and the flares typically operate at temperatures greater than 1600 F.

V. TESTING/SAMPLING

Both flares were tested upon the facility's ROP renewal. Testing was conducted September 21-23, 2021. Flare 3 resulted with an NMOC emission limit of 0.26 ppm, and flare 4 resulted an NMOC emission rate of 0.24 ppm. Both flares measured less than 20 ppm by volume (dry hexane C₆ at 3% O₂). Both flares were tested for visible emissions, and none were observed during the stack test.

The facility conducts monthly H₂S sampling via Draeger Tubes and concentrations in 2021 and 2022 have ranged between 205 and 295 ppm, well below the facility's 500 ppm limit.

VI. MONITORING/RECORDKEEPING

There have not been any 3-hour periods when either flare operated at an average combustion chamber temperature of more than 50 F below that established temperature during the most recent performance test. The facility employs the GoldenWatch system which monitors the flares every five minutes and there is no bypass for the control devices.

The facility conducts monthly SO₂ sampling which has ranged between 205 and 295 per month ppm in 2021 and 2022. Rolling 12-month combined flare totals vary between 22 and 26 tons/month with flares 3 and 4 operating between 670 and 744 hours per month, respectively. Flare 3 has a current 12-month rolling operational total of 8,694 hours, and flare 4 has a current 12-month rolling operational total of 7,523 hours.

Flowrates for flares 3 and 4 have ranged between 51,000 – 117,000 MCF and 4,000 – 27,000 MCF per month, respectively. Flare 3 has a current 12-month rolling flow total of 1,106,951 MCF and Flare 4 has a current 12-month rolling flow total of 181,079 MCF. The fuel content typically is 509.04 Btu/ft³.

The following was recorded during the most recent performance test on September 21-23, 2021.

ENCLOSED FLARE 3:

- Combustion Temperature 1,598 F
- LFG Fuel Use 996 ft³
- LFG CH₄ Content 52.9%,
- Moisture 8.4%
- Exhaust gas temperature 1,332 F
- Exhaust gas flowrate 19,970 ft³/m
- LFG Fuel H₂S measurements (Draeger Tubes) 207 ppm

ENCLOSED FLARE 4:

- Combustion Temperature 1,600 F
- LFG Fuel Use 807 ft³
- LFG CH₄ Content 54.9%,
- Moisture 9.3%
- Exhaust gas temperature 1,569 F
- Exhaust gas flowrate 12,906 ft³/m
- LFG Fuel H₂S measurements (Draeger Tubes) 223 ppm

The facility's MAP references maintenance on the blowers and flares and the frequency with the equipment inspected or serviced.

The facility calibrates, maintains, and operates the enclosed flares according to the manufacturer's specifications, including a temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of plus or minus 1 percent of the temperature being measured expressed in degrees. A propane tank is available to light the flares, if necessary, which operates between 20%-80% of its total volume.

Three thermocouples measure the presence of a flame on each flare and the GoldenWatch system (variable frequency drive) monitors and regulates gas flow to the compressor. The compressor controls the valves to direct flow to the flare and there have not been any malfunctions of the flares. The facility measures the average combustion temperatures of both flares, and they are currently meeting NMOC efficiencies.

FG-ICENGINES

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Test Result 09/21-09/23 2021
. CO	5.0 g/hp-hr2 or 610 ppmvd at 15% O2	Hourly	Each Engine in FG-ICENGINES	N/A
. CO	4.13 g/bhp-hr2	Hourly	Each Engine in FG-ICENGINES	3.43 g/bhp-hr 3.33 g/bhp-hr
. NO _x	2.0 g/hp-hr2 or 150 ppmvd at 15% O2	Hourly	Each Engine in FG-ICENGINES	NA
. NO _x	0.9 g/bhp-hr2	Hourly	Each Engine in FG-ICENGINES	0.62 g/bhp-hr 0.71 g/bhp-hr
. VOC (Not including formaldehyde)	1.0 g/bhp-hr2 or 80 ppmvd at 15% O2	Hourly	Each Engine in FG-ICENGINES	0.09 g/bhp-hr 0.09 g/bhp-hr
. SO ₂	2.92 pph2	Hourly	Each Engine in FG-ICENGINES	1.39 lb/hr 1.31 lb/hr
. SO ₂	25.6 tpy2	12-month rolling time period as determined at end of each calendar month	Each Engine in FG-ICENGINES	6.07 tons/yr 5.73 tons/yr
. formaldehyde	2.07 pph2	Hourly	Each Engine in FG-ICENGINES	1.70 lb/hr 1.65 lb/hr

Above results are for engines 1 and 2 conducted on September 21 – 23, 2021. All are within the permitted limits. The following are additional results from the tests:

ENGINE 1: GZJ00418 serial number

- Generator Output 1,643 kW,
- Engine horsepower 2,292 bhp,
- Fuel use 557 ft³,
- LFG CH₄ Content 54.3%,
- Air to Fuel Ratio 7.2%
- Moisture 13.6%,
- Exhaust gas temperature 972 F
- Exhaust gas flowrate 5,327 ft³/m
- LFG Fuel H₂S measurements (Draeger Tubes) 247 ppm

ENGINE 2: GZJ00443 serial number

- Generator Output 1,640 kW,
- Engine horsepower 2,288 bhp,

- LFG Fuel Use 546 ft³,
- LFG CH₄ Content 54.6%
- Air to Fuel Ratio 7.3%
- Moisture 13.7%,
- Exhaust gas temperature 987 F
- Exhaust gas flowrate 5,155 ft³/m.
- LFG Fuel H₂S measurements (Draeger Tubes) 267 ppm

All are within the permitted limits.

III. PROCESS/OPERATIONAL RESTRICTION(S)

The facility provided an updated malfunction abatement/preventative maintenance plan with their ROP renewal. The plan on file includes the following; identification of the equipment and the supervisory personnel responsible for overseeing it, the description of the items and the frequency of the inspection and repairs, the identification of the equipment and operating parameters that are monitored to detect a malfunction or failure, the identification of the major replacement parts that are maintained in inventory for quick replacement and a description of the corrective procedures or operational changes that are taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

The facility has not installed a sulfur removal system. This was included in the facility's permit to install (PTI 91-20A) when issued on February 28, 2022. The facility expressed desire to potentially install one given the elevated H₂S concentrations were observed which prompted the facility to request an increase in the SO₂ concentration to 500 ppm from 300 ppm in PTI 91-20 issued in April 2021.

IV. DESIGN/EQUIPMENT PARAMETER(S)

The engines air/fuel ratio controller is installed, maintained and operated in a satisfactory manner. The air/fuel ratio controller is inspected daily by the facility, and each engine has a digital metering display to monitor and record the monthly hours of operation.

V. TESTING/SAMPLING

The facility performs yearly testing for the pollutants of CO, NO_x, and VOC for each engine, as well as testing for all the pollutants listed in Section I every five years for each engine. The facility also conducts monthly SO₂ sampling of the engines.

Tests are required every 8,760 engine hours and three separate test runs are conducted during each performance test. Each test run is conducted within 10 percent of 100 percent peak (or the highest achievable) load for one hour per the National Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, 40 CFR Part 60 - Subpart JJJJ.

VI. MONITORING/RECORDKEEPING

The facility logs of all maintenance activities conducted according to the malfunction abatement/preventative maintenance plan. Some activities include an oil and filter change, check valve clearance, and piston head changes.

The facility maintains monthly SO₂ mass emission calculations. The engine with the highest monthly emission rate in 2021 was Engine 2 at 1.75 lbs/hr in April, and the engine with the

highest emission rate thus far in 2022 is Engine 1 at 1.43 lbs/hr in March. The engine with the most hours of operation in 2021 was Engine 2 with 741.5 hours in December, and the engine with the highest engine hours thus far in 2022 is Engine 2 with 739.6 hours in August.

The facility observes, in a satisfactory manner, the hours of operation for each engine via a digital monitoring device located within the gas-to-energy building. Engine 1 read 96,010 hours at the time of inspection and Engine 2 read 92,487 hours. The heating value of the engines was 509 Btu/ft³.

The facility records the hours of operation of each engine on a monthly basis and logs it within the facility maintenance book. These hours are tracked to follow the required maintenance. The facility observes the emission and operating information of the engines in the gas-to-energy building. The building houses a one system compartment which contains the Operator Interface Module touchscreen, a one tie-breaker compartment which contains the digital meter display and lockout relay, and a two-engine/generator with an emergency stop pushbutton. Engine hours are recorded via the digital meter display and emission testing occurs every 8,760 hours for each engine.

The engines were manufactured by Caterpillar in 2010, and have the model number G3520C, and are lean burn 4 stroke engines. Each engine has 2,233 brake-horsepower with an engine displacement of 86 liters with 20 pistons. The initial start-up date for the engines is February 2011. Compliance tests were last performed by the facility in September 2021 and are required yearly per Subpart JJJJ and every five years upon ROP renewal

Engines 1 and 2 (off-line) had landfill gas flows of 561 ft³/min and 56 ft³/min, respectively at the time of inspection.

FGRICEMACT

III. PROCESS/OPERATIONAL RESTRICTION(S)

Each engine operates in a manner which reasonably minimizes HAP emissions. The facility observes the air-to fuel ratio via digital controller. The engine load factor for engine 1 read 98% and engine 2 was offline at the time of inspection with an average air-to-fuel ratio of 7.1 at the time of inspection.

Each engine operates in a manner which minimizes time spent at idle during start-up and minimizes the start-up time to a period needed for appropriate and safe loading of each engine. After the engine oil has obtained a minimum operating temperature, the engines can be loaded to a desired load. The engine oil temperature at the time of inspection for engines 1 and 2 were 197 F and 183 F, respectively. There was no indication or documentation which indicates idle time has exceeded 30 minutes.

IV. DESIGN/EQUIPMENT PARAMETER(S)

The engines are equipped with separate fuel meters to record the daily fuel usage and volumetric flow rate. The fuel flow to both engines was 263,295 MCF with a heating value of 525.7 BTU/SCF in the first half of 2021, and 256,180 MCF with a heating value of 533 BTU/SCF in the second half of 2021. The fuel flow to both engines was 240,466 MCF with a heating value of 509 in the first half of 2022.

The information is recorded by the facility through a digital metering display on each generator set.

VI. MONITORING/RECORDKEEPING

The engines as noted are monitored and recorded regarding the daily fuel usage with separate fuel meters to measure the volumetric flow rate. Engines 1 and 2 had flow rates of 561 ft³/min and 56 ft³/min at the time of inspection.

Conclusion

Based on the AQD inspection and records review, Eagle Valley Landfill is in compliance with the aforementioned requirements and conditions of the facility's Renewable Operating Permit (ROP) (ROP) MI-ROP-N3845-2022.

NAME Robert Joseph

DATE 09-28-22

SUPERVISOR Joyce