

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

N591047168

FACILITY: Venice Park RDF		SRN / ID: N5910
LOCATION: 9536 Lennon Rd., LENNON		DISTRICT: Lansing
CITY: LENNON		COUNTY: SHIAWASSEE
CONTACT: John Davis , Division Engineer and Compliance Manager		ACTIVITY DATE: 12/06/2018
STAFF: Julie Brunner	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspections of WM and NANR operations at Venice Park RDF, ROP No. MI-ROP-N5910-2015		
RESOLVED COMPLAINTS:		

As part of a Full Compliance Evaluation (FCE), AQD staff conducted a compliance inspection of Venice Park Recycling and Disposal Facility (Venice Park RDF) on November 7, 2018. The last compliance inspection was on October 4, 2016 for Waste Management of Michigan, Inc. (WM) operations and on November 2, 2016 for North American Natural Resources (NANR) operations.

The facility operates per the conditions of Renewable Operating Permit (ROP) No. MI-ROP-N5910-2015. The ROP has two sections. Section 1 covers processes owned and operated by WM which includes the landfill operations, landfill gas flare, a landfill gas treatment system, and landfill gas-fired engines #1 and #2. Section 2 covers landfill gas-fired engines 3, 4, 5, 6, 7R, 8R, 9, and 10, and a landfill gas treatment system owned and operated by NANR.

Arrived: 9:22 am

Weather: 38°F, W@16 MPH, cloudy

Departed: 11:40 am

There were no odors from the landfill operations and no visible emissions from the engine stacks at the entrance of the landfill.

Contacts:

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Mr. John Gall, WM District Manager, 810-621-9080, jgall@wm.com

Mr. Richard Spranger, NANR Director of Operations, 734-627-9000, richspranger@gmail.com

Facility Description:

Venice Park RDF is classified as a Type II sanitary landfill, which is a Municipal Solid Waste (MSW) landfill. A "Municipal Solid Waste landfill" or a "Type II landfill" according to Act 451, Part 115, Solid Waste Management states: A landfill which receives household waste, incinerator ash or sewage sludge and which is not a land application unit, surface impoundment, injection well, or waste pile. A municipal solid waste landfill also may receive other types of solid waste, such as commercial waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial waste. Such a landfill may be publicly or privately owned.

Natural biological processes occurring in landfills transform the waste constituents producing leachate and landfill gas. Initially, decomposition is aerobic until the oxygen supply is exhausted. Anaerobic decomposition of buried refuse creates most of the landfill gas. Landfill gas consists mainly of methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), and nonmethane organic compounds (NMOC).

Operations owned and operated by WM and NANR comprise a single stationary source known as Venice Park RDF. WM owns Venice Park RDF which is an active landfill located in eastern Shiawassee County at 9536 East Lennon Road, Lennon, approximately three miles north of I-69. This is a rural site surrounded primarily by farm land.

An active landfill gas collection system has been installed to collect the landfill gas. This system utilizes gas mover equipment to route the collected gas to the gas-to-electric plant and/or flare. Landfill gas produced from the landfill is used to fuel what was ten (10) reciprocating internal combustion engines (RICE). Each engine turns a crankshaft that spins a generator's rotor in an electromagnetic field, generating an electric current that can be used for electricity. WM owns two engines (Engines 1 and 2) which were permitted on Permit to Install (PTI) 166-11. NANR owns eight engines (Engines 3 through 10), two of which (7R and 8R) were replaced with newer engines under PTI 123-11A. When the landfill gas is not routed to the engines, such as during engine maintenance, it is burned in an open flare owned by WM. The open flare is used as a back-up control device to combust the landfill gas when the engines are not operating.

Regulatory Overview:

Venice Park RDF is currently a major Prevention of Significant Deterioration (PSD) source due to the potential to emit of greater than 250 tons per year (tpy) of any regulated air contaminant. Potential emissions of carbon monoxide (CO) at this facility are greater than 250 tpy. The facility is also major for hazardous air pollutants (HAPs) with the potential to emit in equal or greater quantities of 10 tpy of any single HAP and 25 tpy of aggregate HAPs. The potential to emit of greenhouse gases (GHG) in carbon dioxide equivalents (CO<sub>2</sub>e) greater than 75,000 tpy. CO<sub>2</sub>e is a calculation of the combined global warming potentials of six GHGs: CO<sub>2</sub>, CH<sub>4</sub>, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The facility is subject to the Title V - Renewable Operating Permit Program, and also the following federal regulations for air pollutants as discussed below.

40 CFR 60, Subpart WWW, Standards of Performance for Municipal Solid Waste Landfills - The provisions of this subpart apply to each municipal solid waste landfill that commenced construction, reconstruction or modification on or after May 30, 1991. The landfill gas collection and control system are subject to the requirements of Subpart WWW.

40 CFR 60, Subpart JJJJ, Standards of Performance for Spark Ignition Internal Combustion Engines (SI ICE) - The provisions of this subpart apply to SI ICE that commence construction (ordered) after June 12, 2006. Four NANR engines 7R, 8R, 9, and 10 are subject to Subpart JJJJ.

40 CFR 61, Subpart M, Standards of Performance for Asbestos – The facility receives asbestos containing material for proper disposal.

40 CFR 63, Subpart AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills - This subpart requires all subject landfills to meet the requirements of 40 CFR 60, Subpart Cc or WWW. This subpart also requires such landfills to meet the startup, shutdown, and malfunction (SSM) requirements of 40 CFR 63, Subpart A, General Provisions and provides that compliance with the operating conditions shall be demonstrated by parameter monitoring results that are within the specified ranges. It also includes additional reporting requirements.

40 CFR 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) – This subpart establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. WM engines 1 and 2, and NANR engine 3 are subject as existing engines. NANR engines 4, 5, 6, 7R, 8R, 9, and 10 are subject to 40 CFR 63, Subpart ZZZZ as new engines.

The following is a list of emission units/flexible groups for Venice Park RDF:

**ROP No. MI-ROP-N5910-2015 (Section 1):**

EU / FG	Description (Install Date)	Federal Standards
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EU / FG	Description (Install Date)	Federal Standards
EULANDFILL	This emission unit represents the general Municipal Solid Waste (MSW) Landfill. (12/13/95)	40 CFR 60: Subpart WWW, 40 CFR 63: Subpart AAAA
EUACTIVECOLL	This emission unit represents the active landfill gas collection system at the landfill that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment. (12/13/95)	40 CFR 60: Subpart WWW, 40 CFR 63: Subpart AAAA
EUTREATMENTSYS1	Processing equipment that treats collected landfill gas for subsequent sale or use. (12/13/95)	40 CFR 60: Subpart WWW, 40 CFR 63: Subpart AAAA
EUOPENFLARE	Open flare is an open combustor without enclosure or shroud. (5/8/2012)	40 CFR 60: Subpart WWW, 40 CFR 63: Subpart AAAA
EUASBESTOS	Any active or inactive asbestos disposal site. (1/01/81)	40 CFR 61: Subpart M
EUWMENGINE1 / FG ENGINES 1-2	An 800 kW (1148 HP) CAT G3516 LE landfill gas generator engine, manufactured in 1999. (5/8/2012, like-kind replacement 6/2014)	40 CFR 63: Subpart ZZZZ, "existing"
EUWMENGINE2 / FG ENGINES 1-2	An 800 kW (1148 HP) CAT G3516 LE landfill gas generator engine, manufactured in 1993. (5/8/2012)	40 CFR 63: Subpart ZZZZ, "existing"
FGRULE290	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 290.	NA
FGCOLDCLEANER	Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 281(h) or Rule 285(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.	NA

**ROP No. MI-ROP-N5910-2015 (Section 2):**

EU / FG	Description (Install Date)	Federal Standards
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EU / FG	Description (Install Date)	Federal Standards
EUTREATMENTSYS2	Processing equipment that treats collected landfill gas for subsequent sale or use. (12/13/95)	40 CFR 60: Subpart WWW, 40 CFR 63: Subpart AAAA
EUNANREENGINE3 / FGENGINES3-6,	800kW (1148HP) CAT G3516LE landfill gas generator engine, manufactured in Oct. 2000. (2005)	40 CFR 63: Subpart ZZZZ, "existing"
EUNANREENGINE4 / FGENGINES3-6, FGRICEMACT	800kW (1148HP) CAT G3516LE landfill gas generator engine, manufactured in July 2005. (2005)	40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE5 / FGENGINES3-6, FGRICEMACT	800kW (1148HP) CAT G3516LE landfill gas generator engine, manufactured in May 2001. (2005)	40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE6 / FGENGINES3-6, FGRICEMACT	800kW (1148HP) CAT G3516LE landfill gas generator engine, manufactured in July 2007. (2005)	40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE7R / FGENGINES7R-10, FGRICEMACT	A 1600kW (2242HP) CAT G3520C landfill gas generator engine, will be manufactured after 2012. Equipped with an electronic air to fuel ratio controller. (2014)	40 CFR 60: Subpart JJJJ; 40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE8R / FGENGINES7R-10, FGRICEMACT	A 1600kW (2242HP) CAT G3520C landfill gas generator engine, will be manufactured after 2012. Equipped with an electronic air to fuel ratio controller. (2014)	40 CFR 60: Subpart JJJJ; 40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE9 / FGENGINES7R-10, FGRICEMACT	A 1600kW (2233HP) CAT G3520C landfill gas generator engine, manufactured in 2011. Equipped with an electronic air to fuel ratio controller. (5/8/2012)	40 CFR 60: Subpart JJJJ; 40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE10 / FGENGINES7R-10, FGRICEMACT	A 1600kW (2233HP) CAT G3520C landfill gas generator engine, manufactured in 2011. Equipped with an electronic air to fuel ratio controller. (5/8/2012)	40 CFR 60: Subpart JJJJ; 40 CFR 63: Subpart ZZZZ, "new"

#### History of Consent Order No. 30-2013:

Consent Order No. 30-2013 was entered on January 28, 2014 to resolve exceedances of permitted formaldehyde emission limits on the NANR engines. PTI 123-11A was issued to NANR for replacement of Engine 7 (CAT 3516) and Engine 8 (CAT 3512) with engines 7R (CAT G3520C) and 8R (CAT G3520C). The PTI contains testing requirements for CO, nitrogen oxides (NOx), volatile organic compounds (VOC), particulate matter less than or equal to 10 microns (PM10), particulate matter less than or equal to 2.5 microns (PM2.5), and formaldehyde, as appropriate, for individual engines and/or representative engines. At the request of the company, the order was terminated on April 14, 2017 because all requirements had been met.

#### Michigan Air Emission Reporting System (MAERS) - 2017 Reporting Year:

**EULANDFILL:**

NMOC – 13.3 tpy

PM10, filterable – 12.5 tpy

**EUOPENFLARE:**

CO – 0.24 tpy

NOx – 0.10 tpy

PM10/2.5, primary – 0.005 tpy

Sulfur Dioxide (SO<sub>2</sub>)\* – 0.04 tpy

VOC – 0.006 tpy

\* LFG gas sulfur concentration: 66.5 ppmv (11.2 lb/MMscf)

**WM Engines 1 and 2:**

CO – 18.9 tpy

NOx – 12.9 tpy

PM10, filterable – 1.6 tpy

SO<sub>2</sub>\* – 1.8 tpy

VOC – 3.9 tpy

\* LFG gas sulfur concentration: 66.5 ppmv (11.2 lb/MMscf)

**NANR Engines 3 through 6:**

CO – 22.6 tpy

NOx – 14.8 tpy

PM10, filterable – 0.99 tpy

SO<sub>2</sub>\* – 0.86 tpy

VOC – 4.6 tpy

\* LFG gas sulfur concentration: 68.9 ppmv, (11.46 lb/MMscf). Highest result from May 22, 2017 landfill gas sampling

**NANR Engines 7R through 10:**

CO – 124.1 tpy

NOx – 17.3 tpy

PM10, filterable – 3.4 tpy

SO<sub>2</sub>\*\* – 3.8 tpy

VOC – 15.7 tpy

\* LFG gas sulfur concentration: 68.9 ppmv, (11.46 lb/MMscf). Highest result from May 22, 2017 landfill gas sampling

**Inspection – WM (ROP Section 1):**

Mr. John Davis (WM Compliance Manager), Mr. Tony Lindner (WM RE Plant Manager) and Mr. John Gall (District Manager) were on-site for the inspection. A discussion of landfill operations and gas plant operations was conducted prior to going out to inspect the facility operations.

**Landfill Operations:**

The original Cells referred to as A – T, and Cells 1 & 2 are filled. Cells 3, 4, 5, & 6 make up the active landfill. There is active collection in all cells consisting of horizontal and vertical collectors. There is approximately 33 to 34 years of operating life (space) in the landfill. The facility has plans to construct 3 more landfill cells on the property. The plan is to start construction on Cell 8 in approximately 2022. WM owns property to the south of the active landfill.

Leachate from the collection system on the landfill goes to Genesee County, Montrose wastewater treatment plant (WWTP). There are 2-discharge points in the landfill that the drains in the cells are connected to. About 40,000 gallons/day and 6-700,000 gallons/month of leachate is directly discharged to the WWTP.

**Volume of Waste:**

An average of 800 tons per day of waste is taken in by the landfill. In the winter, this drops a little. About 2,100 scfm of LFG is currently produced by the landfill.

**Type of Waste Accepted:**

Residential – About 80% comes from the Flint area with the remainder coming from Lansing.  
Commercial - Including front ends (restaurant waste from food chains like McDonalds, etc.)  
Special wastes (non-hazardous) – About 20,000 gallons/day of liquid waste is received.  
Some construction debris – More in the summer from construction and demolition projects.

The landfill accepts yard waste. The yard waste is piled up in the south east corner of the property and sits for ~90 days where it is turned in a composting type process. The "composted" yard waste is used for alternative cover. About 4,000 cubic yards/year is produced for alternative cover. No commercial composting is done at the facility.

Solid waste was being placed in the landfill during the inspection. Odors from the operations were not evident until up by the open face of the landfill. There have been no odor complaints at this facility. Odor surveys are regularly done to identify and locate the source if odors are detected by staff with the potential to go off-site. Also, contract trash pickers are used to pick up trash out of the ditches and collect trash that had blown off the landfill face during operations. Three trash pickers were actively working at the time of inspection.

Solidification of non-hazardous liquid waste with ash from Genesee Power Station and automotive shredder residue (fluff) prior to disposal in the active landfill cell is done on-site. This process is not considered to emit air contaminants and is therefore not regulated by AQD. The types of non-hazardous liquid waste that is accepted is paint sludge and industrial wastewater (i.e., Arkland, Dow Harbor Beach are some of the customers that send non-hazardous liquid industrial waste).

The solidification process has been relocated in order to stay close to the open face of the landfill. It was operating, but no liquid waste was being actively solidified at the time of the inspection. (A Youngs Environmental truck came through the gate as I was leaving the facility.) Solidification is done in an open top metal vault that is buried in the trash. The tank can hold about 4,500 gallons, and about 3,000 gallons of liquid waste can be processed (mixed with solids) at a time. When not in use, the vault is filled with solids (ash or fluff). Solids are mixed in with the wastewater by an operator on a backhoe. Steam can come off the pile of ash and fluff as the operator scopes up the solids to deposit them in the tank. The pile of solids can get warm while sitting in the sun which produces steam when the pile is moved. No air emissions such as particulate were noted when the process when it was observed operating at the last inspection.

The facility accepts both friable and non-friable asbestos. Friable asbestos is buried as soon as possible. The location of the friable asbestos pit is surveyed. Gas collection systems are not installed in areas where this has been buried. Non-friable asbestos can be put into the working face of the landfill. Asbestos comes in with a manifest (waste shipment record) and the requirements of 40 CFR 61, Subpart M are followed per the special conditions in EUASBESTOS. Copies of the asbestos notification pursuant to 40 CFR 61.154(j) were obtained dated March 9, 2017 and January 23, 2018. The notification is typically sent in annually at the start of the construction season. They provided notice that asbestos containing material may potentially be disturbed during installation of gas extraction wells in a number of landfill cells. Maps of the surveyed in location of the asbestos in Cell 3 (August 2015 thru September 2016) and Cells 1 – 4 (October 2016 thru August 2018) were obtained. From 8-10-2018 to 9-25-2018, 280 yards of asbestos containing waste has been placed in Cell 6, Hole # Cell 6-16.

Diesel tanks to refuel off-road vehicles were noted. These are occasionally moved around the landfill operations for refueling of vehicles. There are 2 – 1,000 gallon tanks up by the landfill working face and 1 – 500 gallon tank of on-road diesel located by the shop.

An old water truck was parked by the south side composting area and water run-off ponds, and a new water truck is on-site. Fugitive road dust is controlled with water application. Water from the on-site storm water run-off ponds is used. Fugitive dust was non-existent during the inspection. It was rather muddy.

Surface scans of the landfill are done quarterly as required by the NSPS and the ROP. The gas collection and control system (GCCS) plan includes the routes for surface scans and closure plans. The last quarterly surface scan was done the Friday before on November 2, 2018. There were no locations at Venice Park RDF where surface concentrations of methane (CH<sub>4</sub>) were greater than 500 ppm.

The NSPS WWW requires that wellheads on collection systems operate at below required temperature and O<sub>2</sub> levels, and at negative pressure. Requests for variances from operating parameters for specific wells could be made as the gas quality decreases in wells. When monitoring shows that the operating parameters are not being met, an alternative timeline to address the issue can be requested to tune and/or identify the issue. Requests could be made to abandon or decommission wells. They have had off-site gas migration issues, and there are monitoring wells located along the edge of the property where this has occurred. No alternative timeline requests have been made in the since the last inspection. A couple of requests to decommission wells have been made.

A GCCS construction and expansion project at the top of the landfill was completed for 2018 in July and August. It included redrilling gas wells and installation of new gas extraction wells with associated gas piping. The startup, shutdown and malfunction report per 40 CFR 63, Subpart AAAAA listed 25 startup events, 22 shutdown events, and three (3) GCCS malfunction events that did not exceed any emission standards for the first half of 2018. Only one (1) instance when all control devices were off-line for more than one hour for EUACTIVECOLL were reported for the first half of 2018.

#### Exempt Equipment:

Propane-fired space heaters exempt per Rule 282(2)(b)(i) are located in the east plant. There are two parts washers (cold cleaners). One is located in the shop and the other in the gas plant. These are included as FGCOLDCLEANER in the ROP. The cold cleaner in the gas plant is serviced every 12 weeks. There is also a flexible group, FGRULE290, but any equipment operating under a Rule 290 exemption has been removed from the facility.

#### WM Gas Plant:

The gas plant consists of two buildings: the east and west plant. The west plant has two engines, EUWMENGINE1 and EUWMENGINE2 owned by WM, the landfill gas (LFG) flare, and EUNANRENGINE3 owned by NANR. The west plant was constructed in the 1992 to 1993 timeframe and EUNANRENGINE3 was added in 2001. The landfill gas flare is strictly used as backup to the gas plant engines. If the WM engines aren't operating, then the gas goes to NANR and they will operate more engines. The flare is the last resort in order to maintain a vacuum on the landfill. EUNANRENGINE3 is permanently off-line and wrapped up. It is scheduled to be removed.

For the WM gas plant, the last "like-kind" engine replacement or engine swapping was for EUWMENGINE1. Notification of this action was provided to Dan McGeen via an email dated June 13, 2014. No "like-kind" engine replacements have occurred since the last inspection. Both engines had a major overhaul (in frame) in 2017. EUWMENGINE1 was done 4-26-2017 at 24,777.8 hours on the engine clock. EUWMENGINE2 was done 4-25-2017 at 30,948.6 hours on the engine clock. Major overhauls are done on an engine if it is using too much oil or based roughly on a clock time of 30,000 hours of operation since the last major.

The gas is treated prior to combustion in any engine. The permit conditions for the gas treatment system are in the ROP. Moisture is removed from the LFG and the gas is filtered in order to not damage the engines. LFG routed to the flare is untreated except for removal of moisture prior to combustion. There are three (3) orifice flow meters that measure the volume of LFG. One meter measures the volume to the WM engines, one measured flow to EUNANRENGINE3, and one measures flow to the NANR engines in the east plant. The flow meters are calibrated annually. The flare also has a flow meter and it is calibrated every 18-months.

The LFG flare was operating. EUWMENGINE1 was operating. EUWMENGINE2 had been shut down for top-end maintenance. Additional issues had been identified (crank shaft) during the top-end so the engine was going to be down longer than anticipated. Plans were being made to send more LFG to NANR. No visible emissions were observed from the engine exhaust stacks. Each stack had a muffler/silencer.

The operating data for EUWMENGINE1 and EUWMENGINE2 is a combined readout. The facility divides the number by two if both engines are operating at the same time.

The following data was collected from the engine cases:

#### EUWMENGINE1

Serial No. 4EK00234

Clock Hours – 38,058.8

Build Date – 5-14 (engine bought used in 2014)

Output – 840 kWH

#### EUWMENGINE2

Serial No. 3RC00821

Clock Hours – 44,274.8

Build Date – couldn't read

Output – 0 kWH

Daily, Tony checks the quality of the LFG using a gas chromatograph (GC). The GC was last calibrated on Sunday (10-28-2018) at 5:27 am. A copy of the calibration results report is attached. The meter is calibrated weekly.

For November 7<sup>th</sup> (day of inspection), the gas content in normalized values were:

CH<sub>4</sub> = 49.99242%

CO<sub>2</sub> = 40.44716%

Nitrogen = 8.80309%

Oxygen = 0.75732%

At a minimum of annually, bag samples of the LFG are collected and analyzed for sulfur content. It is part of the contract with NANR to provide them with the results. The last sampling was done on 11-1-2018. The total reduced sulfur (TRS) content for the LFG sampled was 62.0 ppmv and 60.6 ppmv. Sampling done the year before on 5-18-2017 had measured total reduced sulfur (TRS) contents of 66.7 ppmv and 68.9 ppmv.

EUWMENGINE1 and EUWMENGINE2 were last tested for compliance with the emission limits for CO, NO<sub>x</sub>, PM<sub>2.5</sub>, VOC, and formaldehyde in May of 2014. The testing is "Upon request of the District Supervisor". Compliance with the emission limits Special Condition (SC) I.1 to I.5 is assumed based on the last stack testing and engine maintenance program.

Daily maintenance checks on the engines include noting engine operating hours, oil temperature, oil pressure, oil levels, etc. Copies of the EUWMENGINE1 and EUWMENGINE2 maintenance logs for

2017 and 2018 show replacement of spark plugs, adjustments for valves and bridges, oil/filter changes, and top ends. The requirements of the PM/MAP in SC III.2 are being followed. The logs of all maintenance activities fulfill the requirements in SC VI.7.

#### Records Review:

The following records were received during the inspection:

1. The Total Flow Daily Volume Report for 2017 and 2018.
2. A landfill gas analysis from bag sampling dated 5-18-2017 and 11-1-2018.
3. Calibration data for the GC.
4. 12-month rolling NOx emissions data for EUOPENFLARE from January 2017 to October 2018
5. Totalflow Daily Volume Reports for 2017 and 2018 which include the heat input (MMBtu) data for EUWMENGINE1 and EUWMENGINE2 (FGENGINES1-2).
6. Engine maintenance logs for 2017 and 2018

For EUOPENFLARE, the 12-month rolling NOx emissions up to October 2018 were 0.63 tpy. The NOx limit is 27.3 tpy (SC I.1). EUOPENFLARE is currently being operated well below the permit limit.

For FGENGINES1-2, the 12-month rolling MMBtu data up to October 2018 was 147,448 MMBtu/12-month rolling. The highest heat input occurred in January 2018 and was 148,304 MMBtu/12-month rolling. The LFG usage limit is 158,832 MMBtu/12-month rolling (SC II.1). FGENGINES1-2 is in compliance with this permit limit.

All records obtained in the course of this compliance inspection are attached to the file copy of the report.

#### Inspection – NANR (ROP Section 2):

The east plant and EUNANRENGINE3 located in the west plant is owned and operated by NANR. The east plant was comprised of the following engines: EUNANRENGINE4, EUNANRENGINE5, EUNANRENGINE6, EUNANRENGINE7R, EUNANRENGINE8R, EUNANRENGINE9, and EUNANRENGINE10. EUNANRENGINE3, EUNANRENGINE4, EUNANRENGINE5, and EUNANRENGINE6 have been removed from service because the landfill is not producing enough gas for all NANR engines to operate economically. The ROP mod to remove the engines from the ROP has been processed and issued. The facility is now operating under ROP No. MI-ROP-N5910-2015a.

NANR staff on-site was Dave Terry (plant operator), Nate Gokey (plant operator), and the supervisor, Mr. Richard Spranger were not on-site the day of the inspection.

Four (4) of the engines in the east plant were operating at the time of inspection. The following data from the digital meters were recorded at the time of inspection:

EUNANRENGINE7R – 1263 - 1276 kWH  
EUNANRENGINE8R – 1244 - 1288 kWH  
EUNANRENGINE9 – 1243 - 1256 kWH  
EUNANRENGINE10 – 1266 - 1278 kWH

Performance testing of the engines is required by ROP No. MI-ROP-N5910-2015. Stack testing for EUNANRENGINE9 and EUNANRENGINE10 for CO, NOx, and VOC pursuant to 40 CFR 60, Subpart JJJJ and ROP No. MI-ROP-N5910-2015 was last done on 9-18-2018. Results indicate compliance with the emission limits while operating at near 100% load conditions for each engine. Stack testing for EUNANRENGINE7R and EUNANRENGINE8R for CO, NOx, and VOC pursuant to 40 CFR 60, Subpart JJJJ and ROP No. MI-ROP-N5910-2015 was last done on 5-24-2018. Results indicate compliance with the emission limits while operating at near 100% load conditions for each engine. EUNANRENGINE7R and EUNANRENGINE8R were tested for formaldehyde emissions on 10/4-5/2016 and were found to be in compliance. The permittee is required to verify formaldehyde emission

rates from one or more engines every 5 years. (The engines in FGENSES3-6 met all the testing requirements when they were still operating.)

Below is a listing of the serial numbers and manufacture dates of the engines located on-site at the time of inspection:

Engine EU	Serial Number	Manufacture Date
EUNANREENGINE3*	4EK03001	8-29-2000
EUNANREENGINE4*	ZBA00173	5-23-2005
EUNANREENGINE5*	4EK03434	5-1-2001
EUNANREENGINE7R	GZJ00628	10-26-2012
EUNANREENGINE8R	GZJ00626	10-12-2012
EUNANREENGINE9	GZJ00538	10-26-2011
EUNANREENGINE10	GZJ00539	10-26-2011

\* EUNANREENGINE3 is sitting wrapped up in the bay. EUNANREENGINE4 and EUNANREENGINE5 are scheduled to be removed from the facility very soon. And, EUNANREENGINE6 has already been removed.

NANR doesn't practice engine swap outs for major overhauls. They send the engine out for the major overhaul and get the same engine back. No NANR engines on-site have under gone a major overhaul according to the records. Maintenance records for each engine show oil and filter changes, top ends, cleaning of spark plugs, replacement of various parts, etc. EUNANREENGINE8R underwent a top-end on 10-26-2018.

An electronic copy of the maintenance records was obtained for the following:

Engine EU	Record Dates	Hours
EUNANREENGINE7R	3-8-16 to 11-6-18	9,625 to 21,904
EUNANREENGINE8R	7-1-14 to 10-26-18	66 to 18,304
EUNANREENGINE9	3-5-14 to 11-6-18	10,462 to 23,217
EUNANREENGINE10	9-20-16 to 11-6-18	32,848 to 49,635

The requirements of the PM/MAP in SC III.2 are being followed. The logs of all maintenance activities fulfills the requirements in SC VI.3.f.

For each engine, continuous and daily monitoring of kilowatt output and landfill gas usage is conducted meeting the requirements in SC VI.2 and 3. Electronic copies of the daily log sheets for the engines were obtained for 2017 and 2018. NANR has monitors that measure fuel flow to the east and west plants, and is meeting the requirements in FGRICEMACT, SC IV.1 since only LFG is combusted in the engines. Compliance with all the permit terms and conditions for FGENSES7R-10 and FGRICEMACT was demonstrated.

The gas is treated prior to combustion in any engine. NANR has their own treatment system: EUTREATMENTSYS2. Moisture is removed from the LFG and the gas is filtered in order to not damage the engines. LFG routed to the flare is untreated except for removal of moisture prior to combustion.

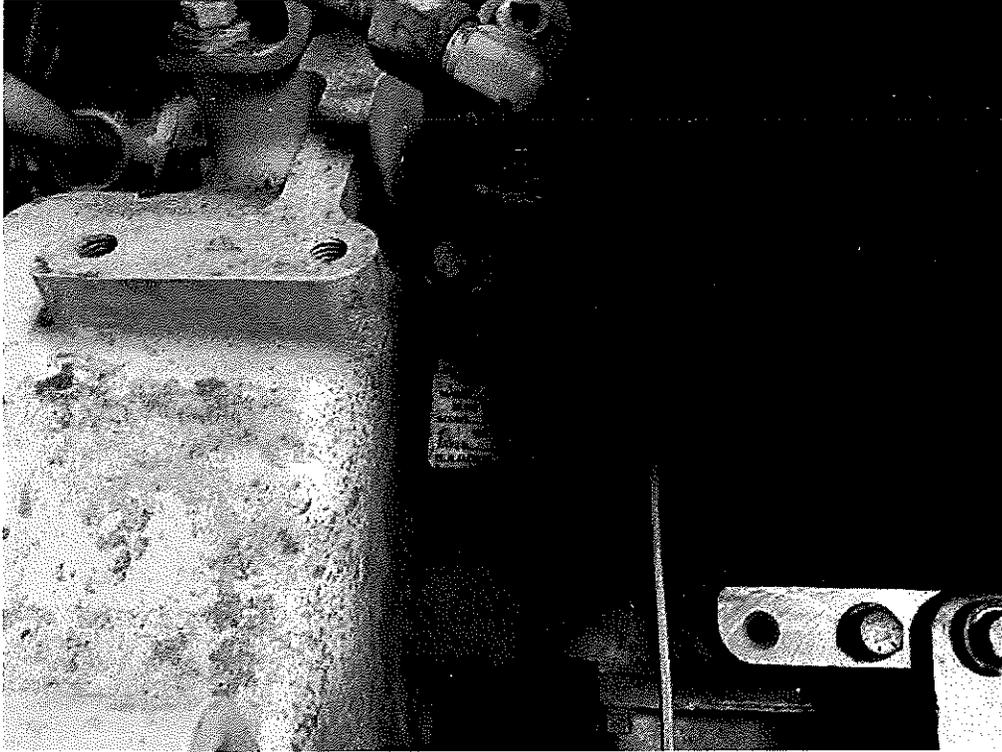
#### Records Review:

1. Daily report (2017/2018) of monitoring data for the hours of operation and landfill gas usage;
2. A landfill gas analysis from bag sampling dated 5-18-2017 and 11-1-2018. (Total sulfur content of the landfill gas burned is required to be tested annually if less than 400 ppm per SC V.3.);
3. Engine maintenance logs.

All records obtained in the course of this compliance inspection are attached to the file copy of the report.

Summary:

No instances of noncompliance with the conditions of ROP No. MI-ROP-N5910-2015, Sections 1 and 2 were identified during the inspection.



**Image 1(1)** : Tag ENWMENGINE1



**Image 2(2) :** Tag EUWMENGINE2

NAME Audie L. Brown

DATE 12/6/18 SUPERVISOR B. M.