

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

N591037508

FACILITY: Venice Park RDF		SRN / ID: N5910
LOCATION: 9536 Lennon Rd., LENNON		DISTRICT: Lansing
CITY: LENNON		COUNTY: SHIAWASSEE
CONTACT: Lori Winters, P.E., Division Engineer and Compliance Manager		ACTIVITY DATE: 11/02/2016
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 two compliance inspections of Venice Park Recycling and Disposal Facility (Venice Park RDF) on October 4, 2016 and November 2, 2016. The last compliance inspection was on September 14, 2015.

The facility operates per the conditions of Renewable Operating Permit (ROP) No. MI-ROP-N5910-2015. The ROP was renewed on October 20, 2015. The ROP has two sections. Section 1 covers processes owned and operated by Waste Management of Michigan, Inc. (WM) – Venice Park RDF which is the landfill operations, landfill gas flare, a landfill gas treatment system owned and operated by WM, 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 North American Natural Resources (NANR).

Contacts:

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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's 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 (CH₄), carbon dioxide (CO₂), 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 rout the collected gas to the gas-to-electric plant. Landfill gas produced from the landfill is used to fuel 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 as a "like-kind" replacement on 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 (CO₂e) greater than 75,000 tpy. CO₂e is a calculation of the combined global warming potentials of six GHGs: CO₂, CH₄, 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 occasionally 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
EULANDFILL	This emission unit represents the general Municipal Solid Waste (MSW) Landfill. (12/13/95)	40 CFR 60: Subparts Cc and 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: Subparts Cc and 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: Subparts Cc and WWW, 40 CFR 63: Subpart AAAA

EU / FG	Description (Install Date)	Federal Standards
EUOPENFLARE	Open flare is an open combustor without enclosure or shroud. 12/13/95	40 CFR 60: Subparts Cc and WWW, 40 CFR 63: Subpart AAAA
EUASBESTOS	Any active or inactive asbestos disposal site. 1/01/81	40 CFR 61: Subpart M
FGENGINES1-2 - EUENGINE1(WM)	An 800 kW (1148 HP) CAT G3516 LE landfill gas generator engine, manufactured in 1999. (2005 / 5/8/2012, replaced 6/2014)	40 CFR 63: Subpart ZZZZ, "existing"
FGENGINES1-2 - EUENGINE2(WM)	An 800 kW (1148 HP) CAT G3516 LE landfill gas generator engine, manufactured in 1993. 2005 / 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
EUTREATMENTSYS2	Processing equipment that treats collected landfill gas for subsequent sale or use. (12/13/95)	40 CFR 60: Subparts Cc and WWW, 40 CFR 63: Subpart AAAA
EUNANREENGINE3 / FGENGINES3-6,	800kW(1148HP)CATG3516LE landfill gas generator engine, manufactured in Oct. 2000. (2005)	40 CFR 63: Subpart ZZZZ, "existing"
EUNANREENGINE4 / FGENGINES3-6, FGRICEMACT	An 800kW(1148HP)CATG3516LE landfill gas generator engine, manufactured in July 2005. (2005)	40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE5 / FGENGINES3-6, FGRICEMACT	An 800kW(1148HP)CATG3516LE landfill gas generator engine, manufactured in May 2001. (2005)	40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE6 / FGENGINES3-6, FGRICEMACT	An 800kW(1148HP)CATG3516LE landfill gas generator engine, manufactured in July 2007. (2005)	40 CFR 63: Subpart ZZZZ, "new"
EUNANREENGINE7R / FGENGINES7R-10, FGRICEMACT	A 1600kW (2242HP) CATG3520C 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) CATG3520C 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"

EU / FG	Description (Install Date)	Federal Standards
EUNANREENGINE9 / FG ENGINES7R-10, FGRICEMACT	A 1600kW (2233HP) CATG3520Clandfill gas generatorengine,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 / FG ENGINES7R-10, FGRICEMACT	A 1600kW (2233HP) CATG3520Clandfill gas generatorengine,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 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. So far compliance has been demonstrated and the case is considered resolved.

Michigan Air Emission Reporting System (MAERS) - 2015 Reporting Year:

EULANDFILL:

NMOC – 13.6 tpy
 PM10, filterable – 9.4 tpy

EUOPENFLARE:

CO – 0.18 tpy
 NOx – 0.08 tpy
 PM10/2.5, primary – 0.004 tpy
 Sulfur Dioxide (SO₂)* – 0.04 tpy
 VOC – 0.005 tpy
 * LFG gas sulfur concentration: 100 ppmv (166.06 lb/MMscf)

WM Engines 1 and 2:

CO – 37.3 tpy
 NOx – 25.5 tpy
 PM10, filterable – 1.5 tpy
 SO₂** – 1.3 tpy
 VOC – 7.6 tpy

NANR Engines 3 through 10:

CO – 168.6 tpy
 NOx – 60.4 tpy
 PM10, filterable – 12.3 tpy
 SO₂** – 4.1 tpy
 VOC – 13.3 tpy

** Using AP-42 to calculate SO₂ emissions (8.23 lbs/MMcf) from the engines? This may be underestimating SO₂ emissions. Also, a different number is being used to calculate SO₂ emissions from the flare versus the engines. The sulfur content of the gas will need to be looked into for the next MAERS cycle.

Inspection – WM (ROP Section 1):

I arrived at the WM office on November 2, 2016 at 9:06 AM. There were no odors from the landfill operations and no visible emissions from the engine stacks at the entrance of the landfill.

Weather: 59°F, NE@2 MPH, UV Index 0 Low

Ms. Lori Winters (WM Compliance Manager) was not on-site at the time of inspection. Mr. Tony Lindner (WM RE Plant Manager) and Mr. John Gaul (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:

Cell 6 is currently the active landfill cell and horizontal collectors have been installed in it. There are plans to install vertical collectors in Cell 6. There is approximately 35 years of operating life (space) in the landfill. The facility has plans to construct 3 more landfill cells on the property but construction of the next cell has been delayed until approximately 2021. WM owns property to the south of the active landfill.

Volume of Waste:

An average of 900 tons per day of waste is taken in by the landfill. In the winter, this drops a little to 800 tons per day.

Type of Waste Accepted:

Residential

Commercial including front ends (restaurant waste from food chains like McDonalds, etc.)

Special wastes (non-hazardous)

Some construction debris

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. No commercial composting is done at the facility.

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.

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. The solidification process was operating. A Youngs Environmental truck was pulled up to the process, and solidification of a red wastewater was occurring. 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 were being mixed in with the wastewater by an operator on a backhoe. Steam was rising from the pile of ash and fluff as the operator scooped 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 from the process and the smell was minimal. (See attached pictures.)

Leachate from the collection system on the landfill goes to Genesee County, Montrose wastewater treatment plant.

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. Asbestos is very rarely disposed of in the landfill. The last asbestos notification pursuant to 40 CFR 61.154(j) was that asbestos containing material may potentially be disturbed during installation of a number of gas extraction wells. This notice was provided on March 7, 2016.

Diesel tanks to refuel off-road vehicles were noted. These are occasionally moved around the landfill operations for refueling of vehicles.

A water truck was parked by the south side composting area and water run-off ponds. Fugitive road dust is controlled with water application. Fugitive dust was minimal during the inspection.

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 on October 5, 2016. There were no locations at Venice Park RDF where surface concentrations of methane (CH₄) were greater than 500 ppm.

The NSPS requires that wellheads on collection systems operate at below required temperature and O₂ levels. Requests for variances from operating parameters for specific wells could be made as the gas quality decreases in wells. Requests could be made to abandon or decommission wells. They do have off-site gas migration, and there are monitoring wells located along the edge of the property where this is occurring.

A GCCS construction and expansion project is scheduled to be completed by the end of December. It includes decommissioning, redrilling, and installation of new wells in the active cell of the landfill. Gas wells that have alternative timelines (EW160 and HC07) will be addressed with this project. (A picture of the wells is attached.)

Exempt Equipment:

Propane-fired space heaters exempt per Rule 282(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.

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.

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. The next engine that will undergo a major overhaul (in frame) will be EUWMENGINE2. Tony projected that this will happen next year. 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 measures flow to EUNANRENGINE3, and one measures flow to the NANR engines in the east plant. The flow meters are calibrated annually. A copy of the last calibration report dated January 19, 2016 was obtained. The flare also has a flow meter and it is calibrated every 18-months.

The LFG flare was not operating but was on standby. EUWMENGINE1 and EUWMENGINE2 were operating. 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 from the digital meters were recorded at the time of inspection:

Combined LFG fuel flow to EUWMENGINE1 and EUWMENGINE2 = 640 scfm
Landfill gas fuel flow to EUNANRENGINE3 = 0 scfm

The following data was collected from off the engine case:

EUWMENGINE1

Serial No. 4EK00234
Hours since last major – 20,611.6
Total Engine Life – 70454.8
Build Date – 5-14 (engine bought used in 2014)
Output – 820 to 830 kWh

EUWMENGINE2

Serial No. 3RC00821

Hours since last major – 26819.6
Build Date – could read
Output – ~ 800 kWh

Daily, Tony checks the quality of the LFG using a gas chromatograph (GC). The GC was last calibrated on January 19, 2016 at the same time the flow meters were calibrated.

For November 2nd, the gas content in normalized values was:
CH₄ = 48.75732%
CO₂ = 39.15468%
Nitrogen = 11.36865%
Oxygen = 0.71935%

Twice a year, bag samples of the LFG are collected and analyzed for sulfur content. The last sampling was done on June 3, 2016. The total reduced sulfur (TRS) content for the LFG sampled was 50.4 ppmv and 56.7 ppmv. It is part of the contract with NANR to provide them with the results.

The LFG quality has been declining due to the age of the waste in the landfill and because the volume of new waste coming in has been lower. NANR has only been operating 3 of their 7 engines at a time due to gas quality and volume. On November 2nd, NANR operations were as follows:
EUNANRENGINE5 - ~805 kWh
EUNANRENGINE7 - ~1550 kWh
EUNANRENGINE10 - ~1570 kWh
Gas flow - 1540 to 1550 cfm

Daily maintenance checks on the engines include noting engine operating hours, oil temperature, oil pressure, oil levels, etc. Copies of the Engine #1 and Engine #2 maintenance log for 2016 show replacement of spark plugs, adjustments for valves and bridges, oil/filter changes, and top ends. The logs of all maintenance activities fulfill the requirements in Special Condition (SC) VI.7.

Departure:

I left at 11:15. No violations or concerns were identified at the time of inspection. Records not obtained during the inspection were emailed.

Records Review:

The following records were received during the inspection:

1. The Total Flow Daily Volume Report for the months of October 2015 to September 2016.
2. A landfill gas analysis from the last bag sampling dated June 13, 2016.
3. Calibration data for the fuel flow meters and GC.
4. Oil analysis and cold cleaner solvent analysis.
5. 4th Quarter 2016 surface monitoring report

The 12-month rolling NO_x emissions data for EUOPENFLARE and the MMBtu data for WM Engines 1 and 2 were sent via email.

For EUOPENFLARE, the 12-month rolling NO_x emissions up to August 2016 were 0.090 tpy. The NO_x limit is 27.3 tpy. EUOPENFLARE is currently being operated well below the permit limit.

For FGENGINES1-2, the 12-month rolling MMBtu data up to September 2016 was 145,015 MMBtu/12-month rolling. The LFG usage limit is 158,832 MMBtu/12-month rolling. FGENGINES1-2 is in compliance with the 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 NANR operations were inspected on October 4, 2016. I arrived at 8:52 AM. There were no odors from the landfill operations and no visible emissions from the engine stacks at the entrance of the landfill.

Weather: 58°F, foggy, wind SE@8 MPH, UV Index 0 Low

The east plant and EUNANRENGINE3 located in the west plant is owned and operated by NANR. The east plant is comprised of the following engines: EUNANRENGINE4, EUNANRENGINE5, EUNANRENGINE6, EUNANRENGINE7R, EUNANRENGINE8R, EUNANRENGINE9, and EUNANRENGINE10. NANR staff, Nate Gokey (plant operator) and Dave Terry (plant operator), and their supervisor, Mr. Richard Spranger were on-site and providing support for the stack testing that was happening that day.

For the last year, NANR has been operating two (2) CAT 3520s and one (1) CAT 3516 at a time. The landfill is not producing enough gas for all NANR engines to operate at the same time. Also, the gas quality has been declining because WM has been taking in less waste.

At the time of inspection, the gas content (snap shot) was:

- CH₄ = 50.1%
- CO₂ = 39.7%
- Nitrogen = 9.5%
- Oxygen = 0.5%

Three (3) 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:

- EUNANRENGINE5 – 995 to 1000 KWH
- EUNANRENGINE8R – 1533 to 1604 KWH
- EUNANRENGINE10 – 1542 to 1615 KWH

Performance testing of the engines is required by ROP No. MI-ROP-N5910-2015 and AQD Consent Order No. 30-2013. Three (3) CAT 3520 engines (EUNANRENGINE7R, EUNANRENGINE8R and EUNANRENGINE10) were tested for CO, NO_x, and VOC per the requirements of ROP No. MI-ROP-N5910-2015, and 40 CFR 60, Subpart JJJJ. One (1) CAT 3516 (EUNANRENGINE5) and two (2) CAT 3520 engines (EUNANRENGINE7R and EUNANRENGINE8R) were tested for formaldehyde emissions per the requirements of ROP No. MI-ROP-N5910-2015 and AQD Consent Order No. 30-2013. The test plan was approved on September 8, 2016. Testing of EUNANRENGINE8R and EUNANRENGINE10 was on October 4th, and EUNANRENGINE5 and EUNANRENGINE7R was tested on October 5th.

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
EUNANRENGINE3	4EK03001	8-29-2000
EUNANRENGINE4	ZBA00173	5-23-2005
EUNANRENGINE5	4EK03434	5-1-2001
EUNANRENGINE6	ZBA00709	6-13-2007
EUNANRENGINE7R	GZJ00628	10-26-2012
EUNANRENGINE8R	GZJ00626	10-12-2012
EUNANRENGINE9	GZJ00538	10-26-2011
EUNANRENGINE10	GZJ00539	10-26-2011

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. None of the NANR engines on-site have under gone a major overhaul in the last 3 years 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.

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

Engine EU	Record Dates	Hours
EUNANRENGINE3	8-21-13 to 5-31-16	97,110 to 112,234
EUNANRENGINE4	7-12-13 to 8-19-16	61,931 to 83,396
EUNANRENGINE5	6-25-14 to 8-25-16	-- to 80,603
EUNANRENGINE6	9-19-12 to 5-9-16	41,819 to 64,548

EUNANRENGINE7R	7-18-14 to 9-27-16	876 to 10,641
EUNANRENGINE8R	7-1-14 to 9-22-16	66 to 7,564
EUNANRENGINE9	11-30-12 to 9-11-16	835 to 15,584
EUNANRENGINE10	2-19-16 to 9-22-16	28,094 to 32,891

For FGENGINE3-6, the logs of all maintenance activities fulfills the requirements in SC VI.2. For the logs of all maintenance activities fulfills the requirements in SC VI.3.f.

For each engine in FGENGINE3-6, daily monitoring of kilowatt output and landfill gas usage is required per SC VI.3 and 4. Electronic copies of the daily log sheets for the engines in FGENGINE3-6 were obtained for the month of September. NANR has monitors that measure fuel flow to the east and west plants, and is meeting the requirements in FGRICEMACT, SC IV.1 as long as only one fuel is combusted in the engine. Compliance with all the permit terms and conditions for FGENGINE3-6, FGENGINE7R-10, and FGRICEMACT was demonstrated.

The stack testing results to verify compliance with the permitted emission limits and 40 CFR 63, Subpart JJJJ are pending.

Departure:

I left the NANR facility at 3:15 PM while the testing of EUNANRENGINE8R was on-going. No violations were identified at the time of inspection. The requested records were emailed.

Records Review:

1. Monitoring data for the hours of operation and landfill gas usage;
2. Total sulfur content of the landfill gas burned;
3. Calculated amount of landfill gas combusted ineachengine on amonthly and12-month rolling basis;
4. Hours of operation on a monthly and 12-month rollingbasis;

Summary of LFG Flow, KWH, and Engine Running Hours from October 2015 to September 2016:

Engine EU	LFG Flow (MCF)	KWH	Hours
EUNANRENGINE3	3,274	212,216,133	231
EUNANRENGINE4	101,171,805	732,193,062	5,942
EUNANRENGINE5	83,573,006	615,768,897	4,818
EUNANRENGINE6	71,601,677	529,155,559	4,391
EUNANRENGINE7R	136,390,235	163,975,250	4,724
EUNANRENGINE8R	90,534,816	103,094,250	2,774
EUNANRENGINE9	57,197,620	257,858,000	1,721
EUNANRENGINE10	257,696,841	534,292,000	8,345
Total:	798,169,274	3,148,553,151	32,946

The total reduced sulfur (TRS) content for the LFG sampled June 3, 2016 was 50.4 ppmv and 56.7 ppmv.

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, Section 2 were identified during the October 4, 2016 inspection.

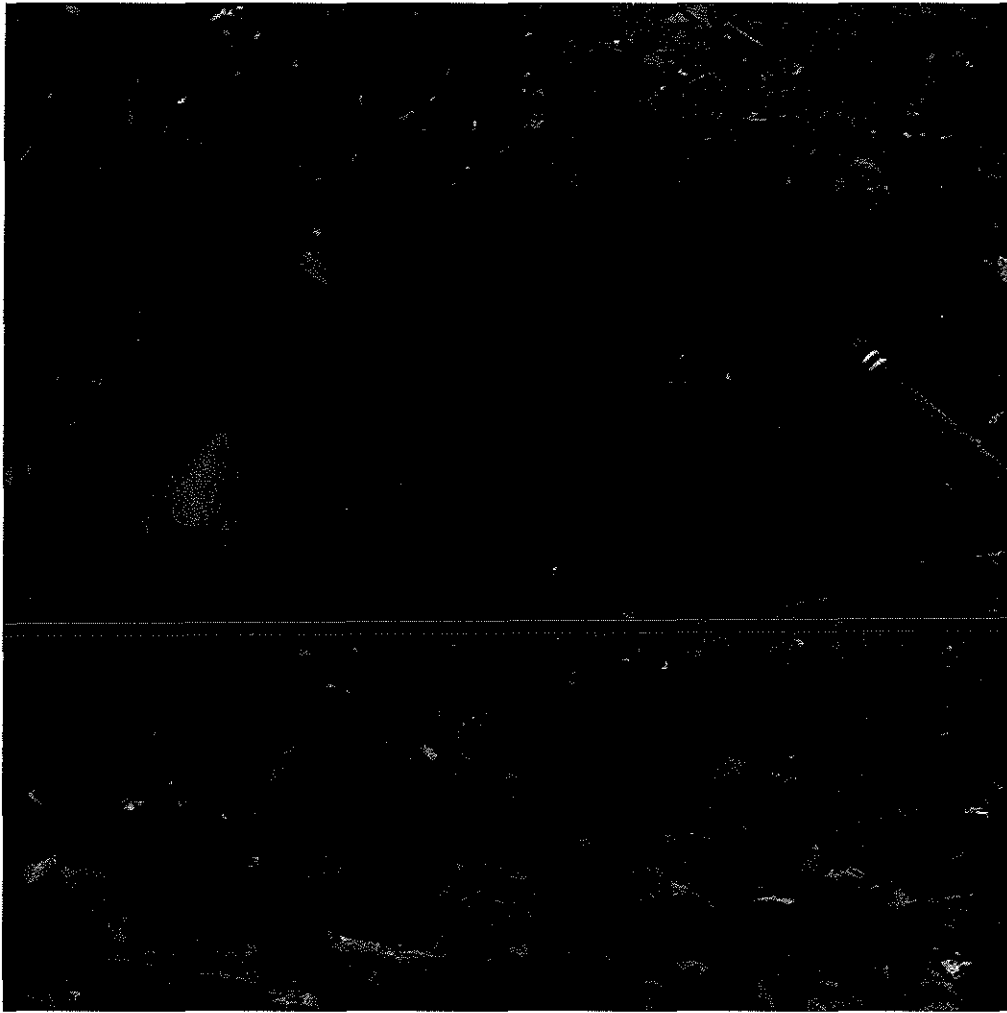


Image 1(Solidification) : Red waste water being pumped into the solidification vault.



Image 2(Solidification) : Steam rising off of pile of ash and fluff.



Image 3(Gas wells) : LFG wells near the active face of the landfill.

NAME Julie P. Brown DATE 11/7/2016 SUPERVISOR B. M.