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DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION

ACTIVITY REPORT: Scheduled Inspection

M446930924

FACILITY: RIVERVIEW LAND PRESERVE		SRN / ID: M4469
LOCATION: 20863 GRANGE RD, RIVERVIEW		DISTRICT: Detroit
CITY: RIVERVIEW		COUNTY: WAYNE
CONTACT: Gary Quantock, Vice President of Operations		ACTIVITY DATE: 04/28/2015
STAFF: Jonathan Lamb	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: FCE Inspection, FY 2015		
RESOLVED COMPLAINTS:		

**FACILITY BACKGROUND:**

Riverview Energy Systems and Riverview Land Preserve are considered a single stationary major source subject to the Title V Program. The source was issued Renewable Operating Permit (ROP) No. MI-ROP-M4469-2015 on January 7, 2015. The ROP is divided into two sections: Section 1 covers operations at Riverview Energy Systems and Section 2 covers operations at Riverview Land Preserve. The source is located in a mostly residential area of Riverview, bordering the City of Trenton.

Riverview Land Preserve (RLP), located at 20863 Grange Rd., is a municipal solid waste landfill owned and operated by the City of Riverview which currently services 15 Downriver communities. The landfill started accepting wastes around 1968 and comprises an area of roughly 300 acres with a design capacity of 39.26 million tons (35.38 million megagrams); current estimates show that the landfill is expected to reach capacity around 2028. Since the design capacity is over 2.5 million megagrams, the facility is subject to 40 CFR Part 60, Subpart WWW – Standards of Performance for Municipal Solid Waste Landfills and 40 CFR Part 63, Subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills.

Riverview Energy Systems (RES), located at 20000 Grange Rd., operates a landfill-to-gas energy facility at the Riverview Land Preserve. Gas produced by the degradation of waste in the landfill is treated and then burned as fuel in turbines to product electricity. RES is co-owned by DTE Biomass Energy and Aria Energy, with DTE Biomass responsible for the operations of the facility. DTE Biomass Energy is a wholly-owned subsidiary of DTE Energy.

**COMPLAINT/COMPLIANCE HISTORY:**

The facility has a long history of odor complaints from residents of Riverview and Trenton due to fugitive emissions of landfill gas. This led to a class-action lawsuit against the facility, which was settled in 2014. Periodic complaints have been received since that time, but AQD has not verified off-site odors during recent odor complaint investigations.

Riverview Land Preserve was issued a Violation Notice, dated April 20, 2012, following the catastrophic failure of one turbine, which caused both turbines to become inoperable. The facility was cited for not having sufficient control to handle the landfill gas while the turbines were inoperable. As a result, the landfill installed a second temporary flare, which was replaced by a second permanent flare in 2013.

Riverview Land Preserve was also issued a Violation Notice, dated July 28, 2009, for operating a significant portion of the wellfield under positive pressure due to insufficient vacuum. As part of the compliance plan, the facility implemented procedures to maintain applied vacuum to the wellfield, including in instances in which the control system goes down.

**INSPECTION NARRATIVE:**

The inspection was performed on April 27 (Riverview Energy Systems) and April 28 (Riverview Land Preserve), 2015. RES was performing NOx and CO testing on the turbines on those dates, so I arrived at RES on the morning of April 27 to observe the testing and perform an inspection of the facility. Dave Patterson, AQD-TPU, was also on site to observe the testing, which was performed by DTE's own testing group (Mark Grigereit and Tom Snyder were the testers). Also present for DTE Biomass were Nick Diedrich, Environmental Engineer, and

Joe Davis, Plant Operator. There were no major issues during the testing.

I arrived at Riverview Land Preserve the following day, April 28, to complete my inspection of the stationary source. I met with Bob Bobeck, Director of Solid Waste, and two of the facility's consultants, Summer Hitchens and Jennifer Bowyer, of Cornerstone Environmental. We discussed current operations at the facility, planned installations of new wells and gas collection equipment for the upcoming construction season, and odor complaints received over the past couple years. The well construction season was slated to begin soon and was expected to take around three weeks to install new wells in the Cell 5 and Cell 6 slope cap. Active filling is currently taking place in Cell 6, which is the cell on the south side of the landfill, close to King Road (bordering Trenton and the neighborhoods where the most recent odor complaints have been received). Cell 6 is expected to be filled sometime in 2016 and the facility will then move to Cell 7. The landfill currently accepts municipal waste (mostly household and commercial waste) from 15 communities, in addition to some non-hazardous special wastes. Although permitted to do so, the landfill does not accept asbestos waste. The landfill currently does not accept wastewater sludges, and no composting operations are performed on the property. Wastes are received throughout the day Monday through Friday and on Saturday mornings. "ConCover" (a mix of polymers and recycled paper fibers) is used for daily cover for erosion control and appearance.

We then drove around the landfill, including the active areas, to check for odors and cover integrity, and inspect the BioGas System before concluding the inspection.

### **PROCESS DESCRIPTION/EQUIPMENT:**

#### Riverview Land Preserve

Riverview Land Preserve uses a gas collection and control system (GCCS) which is designed to draw landfill gas (LFG) from the active fill areas, interim cover areas, and areas filled to final grade. The GCCS uses a series of interconnected wells, horizontal collectors, surface collectors and other gas extraction devices operating under negative pressure to collect LFG throughout the landfill and move the gas to the control system; two turbines (operated by RES) are the primary control, with two flares used as back-up/secondary control. Currently, there are 162 vertical extraction wells installed in the final grade and active fill areas, which are spaced approximately 200-250 feet apart to provide adequate coverage for gas extraction. The two flares, EUOPENFLARE1 (2,131 cfm; installed in August 2004) and EUOPENFLARE2 (4,700 cfm; installed in January 2013), are operated by RLP and are used to burn LFG produced in excess of what the turbines can accommodate, or during times when the turbines are down. EUOPENFLARE2 is the main flare and operates almost continuously since the landfill is currently producing more gas than the turbines can accommodate; at present time, all cells are producing methane, and the LFG production rate is around 4,100 cfm. Approximately 3,700 cfm goes to RES to be burned as fuel in the turbines and the rest is burned in the flares. EUOPENFLARE1 is used as a back-up.

RLP also operates a BioGas System (EUBIOGASTREATSYS), which was installed in 2013. The system treats LFG to be used as a fuel for vehicles. Currently, this fuel is used for vehicles used at the facility and for some vehicles used by the City of Wyandotte. The process takes gas from the landfill and runs it through an adsorbent media to remove H<sub>2</sub>S and then through a heating and chilling unit to remove moisture. The gas is sent through three charcoal filter vessels to remove VOCs and additional H<sub>2</sub>S, then through a particulate filter to remove residual charcoal. At this point, the gas is approximately 95% methane. The gas is then heated and compressed to 4200 psi, at which point it is ready to be dispensed and be used as fuel in vehicles.

Leachate is produced in the landfill and can be a potential source of odors. Leachate from Cells 1, 2, and 3 are collected into a 20,000 gallon tank for storage before being taken off-site and disposed of by Usher Oil due to a high PCB content. Leachate produced from Cells 4, 5, and 6 has a low enough PCB content to be discharged directly to the city sewer system. Mr. Bobeck stated that the facility is building a leachate pre-treatment facility (to be located near the flares) to remove PCBs from leachate collected from Cells 1, 2, and 3 so that the leachate can be discharged directly to the city sewer system to save the cost of having the waste transported to a disposal facility. The pre-treatment system has a capacity to treat up to 2,500 gallons per day and was expected to be operational in the next couple months.

#### Riverview Energy Systems

LFG collected by the GCCS which is not flared is sent to RES to be used as fuel. The LFG is fed from a common header to the landfill gas treatment system (EU-TREATMENTSYS). The treatment system processes the collected landfill gas by removing particulates down to 10 microns, compressing the gas, and removing excess moisture prior to combustion in the turbines. Collected landfill gas is conveyed to a scrubber, which removes the particulate and condensate, before going through two identical compressor skids (Skid 500 and Skid 600), which

compresses the gas to 160-185 psi. The skids are set up in parallel; both skids are usually used simultaneously but the treatment system can operate on one skid if the other is down for maintenance. The compression heats the gas up to 230-240°F, so the gas passes through a heat exchanger to remove the excess heat; outlet gas temperature at this point is around 100°F. This causes the formation of condensate in the gas stream, which must be removed by a dewatering system. The dewatered gas is then slightly heated back up to around 140°F before it is sent to the turbines for combustion.

There are two Solar Centaur 40 turbine engines, Turbine #1 (EUTURBINE1) and Turbine #2 (EUTURBINE2), which combust LFG to produce electricity. The turbines are rated at a heat input of 12 MMBtu/hr (3516 kWe) and operate at a maximum flow rate of 3.8 MMscf/day with an average heating value for LFG of 520 Btu/scf. Both turbines are permitted as a flexible group (FGTURBINES) and are subject to 40 CFR Part 60, Subpart GG – Standards of Performance for Stationary Gas Turbines, which applies to stationary gas turbines with a heat input greater than 10 MMBtu/hr that commenced construction, modification, or reconstruction after October 3, 1977.

The specs for each turbine at the time of inspection:

Turbine #1  
Centaur 40 ver. 4701  
Engine ID: EC471C-20GL00T0  
Serial No.: OHE15-C6392  
Power: 3516/NA kWe

Turbine #2  
Centaur 40 ver. 4701  
Engine ID: EC471C-20GLR000  
Serial No.: OHI12-C7323  
Power: 3516/NA kWe

According to maintenance records, Turbine #2 was replaced with a "refurbished" unit on December 10, 2012. In a meeting with AQD on June 11, 2012, DTE argued that this did not constitute a reconstruction or modification because the cost of the refurbished unit was below 50% of the cost to install a new unit, there was no emission increase or emissions of any new air contaminant, and that, at the time, RES was not considered a major source under PSD or nonattainment NSR regulations. A cost analysis was provided during the meeting. Based on that discussion and information provided, AQD determined that the turbine replacement did not constitute a reconstruction or modification of an existing emission unit. Turbine #1 was replaced by a "rebuilt" unit and put into service on March 21, 2015. RES submitted initial notification, dated March 27, 2015, that Turbine #1 was now subject to 40 CFR Part 60, Subpart KKKK – Standards of Performance for Stationary Gas Turbines. However, RES said that notification was made in error and that Turbine #1 is not subject to Subpart KKKK, but remains subject to Subpart GG.

Approximately 17-18% of the electricity produced by the turbines is used on site to power the compressor skid system while the remainder of the electricity goes to the grid for use on the open market.

#### **APPLICABLE RULES/ PERMIT CONDITIONS:**

Facility was issued ROP No. MI-ROP-M4469-2015, on January 27, 2015, which was a renewal of its Title V permit.

Emission and production records from January 2011 through March 2015 were evaluated to determine compliance during this inspection. These records can be found in the orange facility file.

ROP No. MI-ROP-M4469-2015; applicable permit conditions:

#### **SECTION 1: RIVERVIEW ENERGY SYSTEMS (RES)**

##### **A. General Conditions**

###### **Certification & Reporting**

24. NOT IN COMPLIANCE. Facility submitted inaccurate actual sulfur dioxide emissions to the Michigan Air Emissions Reporting Systems (MAERS) for 2011, 2012, 2013, and 2014.

## B. Source-Wide Conditions

### VII. Reporting

1. IN COMPLIANCE. Any deviations are reported promptly. Facility has not reported any deviations associated with applicable source-wide conditions.
2. IN COMPLIANCE. Semi-Annual Deviation Reports are submitted by March 15 and September 15 of each year.
3. IN COMPLIANCE. Annual ROP Certification Reports are submitted by March 15 of each year.

### IX. Other Requirements

1. IN COMPLIANCE. Malfunction Abatement Plan is implemented and maintained.

## C. Emission Unit Conditions

### EU-TREATMENTSYS – Landfill gas treatment system

#### III. Process/Operational Restrictions

1. IN COMPLIANCE. Treatment system is operated at all times when the gas is routed to FGTURBINES.
2. IN COMPLIANCE. LFG collected in the treatment system are routed to the turbines and/or flares, required by 40 CFR 60.752(b)(2)(iii)(A) or (B).
3. IN COMPLIANCE. LFG collected in the treatment system is sent to either the turbines or flares for control, in accordance with the provisions of 40 CFR 60.753(e) and (f).

#### IV. Design/Equipment Parameters

1. IN COMPLIANCE. Treatment system is designed, installed, and operated as approved.

#### VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility maintains records of any control system exceedances. The facility has not recorded exceedances of the operational standards set in 40 CFR 60.753(e) and (f) for EU-TREATMENTSYS during the compliance evaluation period.
2. IN COMPLIANCE. Records of preventative maintenance performed are maintained.
3. IN COMPLIANCE. Facility provided information describing the operation of the control device, operating parameters that would indicate proper performance, and appropriate monitoring procedures, which had been approved by AQD.

#### VII. Reporting

1. IN COMPLIANCE. Any deviations are reported promptly.
2. IN COMPLIANCE. Semi-Annual Deviation reports are submitted by March 15 and September 15 of each year.
3. IN COMPLIANCE. Annual ROP Certification Reports are submitted by March 15 of each year.
4. IN COMPLIANCE. Facility provided information describing the operation of the control device, operating parameters that would indicate proper performance, and appropriate monitoring procedures to AQD within 30 days of issuance of this permit. Information was received on February 3, 2015.
5. IN COMPLIANCE. Landfill Gas Treatment System reports are sent to AQD on a semi-annual basis. The reports include a) value and length of time of any exceedances; b) description and duration of all periods when the gas stream is diverted from the treatment system through a bypass line; c) description and duration of all periods when the treatment system was not operating for a period exceeding one hour; and d) description and duration of all periods when the treatment system was not operated in accordance with the operating parameters and monitoring procedures as approved in S.C. VII.4. Since 2011, the facility has reported numerous occurrences of malfunction and shut-down events lasting over 1 hour; most were the result of loss of power from the utility or due to maintenance activities.
6. IN COMPLIANCE. Startup, shutdown, and malfunction (SSM) report is submitted to AQD on a semi-annual basis.

#### IX. Other Requirements

1. IN COMPLIANCE. EU-TREATMENTSYS is subject to 40 CFR Part 60, Subpart WWW – Standards of Performance for Municipal Solid Waste Landfills. Facility certified that there were no exceedances over 1 hour for EU-TREATMENTSYS.
2. IN COMPLIANCE. Facility maintains and implements a written SSM Plan in accordance with 40 CFR 63.6(e) (3) for EUTREATMENTSYS.
3. IN COMPLIANCE. Facility maintains and implements a Preventative Maintenance Plan for EUTREATMENTSYS.

D. Flexible Group Conditions

FGTURBINES (EUTURBINE1 and EUTRUBINE2) - Two 520-BTU/scf Solar gas turbines.

I. Emission Limits:

Pollutant	Limit	Highest Actual	Compliance Status
1. NOx	Not Evaluated	Not Evaluated	NOT EVALUATED <sup>1</sup>
2. NOx	0.0071% at 15% oxygen; each turbine	EUTURBINE1: 0.0029% EUTRUBINE2: 0.0029%	IN COMPLIANCE
3. NOx	64.6 tons per 12-month rolling; each turbine	EUTURBINE1: 5.59 tons (Jan. 2015) EUTURBINE2: 6.76 tons (Sept. 2014)	IN COMPLIANCE
4. SO <sub>2</sub>	0.015% at 15% oxygen; each turbine	Not Applicable	IN COMPLIANCE <sup>2</sup>
5. SO <sub>2</sub>	17.34 tons per 12-month rolling; each turbine	EUTURBINE1: 54.93 tons (Aug. 2014) EUTURBINE2: 56.65 tons (Aug. 2014)	NOT IN COMPLIANCE
6. CO	15.78 pph; each turbine	EUTURBINE1: 2.46 pph EUTURBINE2: 2.91 pph	IN COMPLIANCE
7. HCl	2.05 pph for FGTURBINES	FGTURBINES: 0.39 pph (based on Feb. 2015 sampling)	IN COMPLIANCE
8. HCl	9.0 tons per 12-month rolling for FGTURBINES	FGTURBINES: 0.66 tons (March 2015)	IN COMPLIANCE
<p><sup>1</sup>Required to be calculated once per term of the ROP. Stack testing to show compliance with the NOx limit set in Special Condition I.2 of this table demonstrates compliance with this requirement until the facility completes the calculation.</p> <p><sup>2</sup>Facility demonstrates compliance with the sulfur dioxide standard in Subpart GG by maintaining a total sulfur in fuel content below 0.8 percent by weight, as allowed in 40 CFR 60.333.</p>			

II. Material Limits

- IN COMPLIANCE. Daily records of LFG combustion were not reviewed during this inspection, but based on monthly records of LFG combustion, the highest daily LFG combustion rate based on monthly average was 5.4 MMscf/day for the month of January 2015, which is below the permit limit of 7.6 MMscf/day LFG combusted. A more thorough review of daily LFG combustion records will be performed during the next compliance evaluation.
- IN COMPLIANCE. Total sulfur in landfill gas did not exceed 0.8% by weight. LFG is tested twice per year; the highest total sulfur during the compliance period was 0.14% in the sample collected on September 5, 2013 (report dated September 16, 2013).

III. Process/Operational Restrictions

- IN COMPLIANCE. All collected LFG not combusted in FGTURBINES is routed to the two open flares.

V. Testing/Sampling

- IN COMPLIANCE. Samples of LFG are analyzed to determine the total chlorine concentration of the LFG once every 5 years, as allowed per this condition since HCl emissions are below 75% of permit limits. Sampling is performed by Derenzo and Associates with lab analysis performed by Eurofins Air Toxics. The most recent sample was obtained on February 10, 2105, and results were sent to DTE Energy Resources in a report dated March 30, 2015. Results of this sample show an HCl emission factor of 1.71 lb/MMscf and an actual HCl emission rate of 0.39 lb/hr, with a potential HCl emission rate of 0.54 lb/hr at maximum permitted operating conditions.
- NOT IN COMPLIANCE. Facility determines the sulfur concentrations in fuel in accordance with the EPA approved custom fuel monitoring plan included as Appendix 9-1. However, the facility failed to monitor the sulfur concentration in fuel during the first quarter of 2013, as required by the fuel monitoring plan. According to the approved fuel monitoring plan, RES does not have to sample for nitrogen since past testing showed no fuel-bound nitrogen in the landfill gas.
- IN COMPLIANCE. Testing to determine NOx and CO emission rates from FGTURBINES was performed on April 27 and 28, 2015.

#### VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Consumption of LFG in FGTURBINES is recorded on a daily basis.
2. IN COMPLIANCE. Facility calculates and records the following information:
  - a. NOx emission rate per Appendix 7-1, based on stack test results, once per term of the ROP.
  - b. Monthly and 12-month rolling total NOx emissions for each turbine on a monthly basis.
  - c. Monthly and 12-month rolling total SO<sub>2</sub> emissions for each turbine on a monthly basis.
  - d. CO hourly emission rate, based on stack test data.
  - e. HCl hourly emission rate, based on testing data.
  - f. 12-month rolling total HCl emissions on a monthly basis, based on testing data.

#### VII. Reporting

1. NOT IN COMPLIANCE. Facility failed to report deviations in a timely manner. Specifically, the facility did not report exceedances of the 12-month rolling total SO<sub>2</sub> limit from FGTURBINES from 2011 through 2013 until the Semi-Annual Deviation Report submitted in September 2014.
2. NOT IN COMPLIANCE. Semi-Annual Deviation Reports were submitted by the required dates; however, the facility failed to accurately report deviations from 2011 through 2013 until the Semi-Annual Deviation Report submitted in September 2014.
3. NOT IN COMPLIANCE. Annual ROP Certification Reports were submitted by the required dates; however, the reports failed to accurately certify compliance for calendar years 2011, 2012, and 2013.

#### VIII. Stack/Vent Restrictions

IN COMPLIANCE. Turbine stack dimensions appear to meet permit specifications.

#### IX. Other Requirements

1. NOT IN COMPLIANCE. Facility failed to comply with the custom fuel sampling schedule, as required in 40 CFR 60.334(i)(3) under Subpart GG of the New Source Performance Standards. Facility was in compliance with the applicable provisions of Subpart A of the New Source Performance Standards.
2. IN COMPLIANCE. Vacuum sweeper is used to sweep paved roads and parking lots, as necessary.
3. IN COMPLIANCE. Unpaved roads and lots are treated with dust suppressant as needed.

#### FGCOLDCLEANERS-S1

NOT APPLICABLE. There are no cold cleaners at Riverview Energy Systems, so conditions associated with this flexible group were not evaluated.

### **SECTION 2: RIVERVIEW LAND PRESERVE (RLP)**

#### B. Source-Wide Conditions

##### VII. Reporting

1. IN COMPLIANCE. Deviations are reported promptly.
2. IN COMPLIANCE. Semi-Annual Deviation Reports are submitted by March 15 and September 15 of each year.
3. IN COMPLIANCE. Annual ROP Certifications are submitted by March 15 of each year.

##### IX. Other Requirements

1. IN COMPLIANCE. Facility maintains and implements a Malfunction Abatement Plan (MAP), which includes actions taken to correct and prevent recurrence of an abnormal condition or malfunction, including odors.

#### C. Emission Unit Conditions

### EULANDFILL – Municipal Solid Waste (MSW) Landfill

#### I. Emission Limits

1. IN COMPLIANCE. Facility performs quarterly surface monitoring of the landfill to determine methane emissions. A review of the quarterly monitoring reports show some readings of methane level above 500 ppm over background levels, but these exceedances have been infrequent (generally, no more than three per quarter) and 10-day re-monitoring have shown no exceedances following corrective actions. Per 40 CFR 60.755, if appropriate corrective actions are taken after an exceedance, the exceedance is not considered a violation of

operational requirements. Therefore, this condition is considered to be in compliance.

### III. Process/Operational Restrictions

1. IN COMPLIANCE. Facility complies with the requirements in 40 CFR 63.1955(b) and 40 CFR 63.1960 through 63.1980. Compliance is demonstrated through testing and monitoring of the LFG collection system, continuous monitoring of the control device, recordkeeping, and reporting.

### IV. Design/Equipment Parameters

1. IN COMPLIANCE. LFG collection and control system is installed and maintained.
2. IN COMPLIANCE. Collected LFG is routed to a control system (turbines and flares).

### V. Testing/Sampling

1. IN COMPLIANCE. Surface emission monitoring is conducted quarterly to determine if methane concentrations exceed 500 ppm above background.
2. IN COMPLIANCE. Surface emission monitoring for methane is conducted in accordance with the procedures outlined in 40 CFR 60.753(d). Readings over 500 ppm above background are marked as exceedances and, after corrective actions are taken, the area is re-monitored within 10 days. If the area exceeds 500 ppm during re-monitoring, additional corrective actions are taken and the area is re-monitored again within 10 days. During the compliance period, the landfill did not have any areas which exceeded 500 ppm during re-monitoring after the initial exceedance.
3. IN COMPLIANCE. Surface emission monitoring for methane is done with the instrumentation and procedures required by 40 CFR 60.755(c).
4. IN COMPLIANCE. Records of quarterly surface monitoring area maintained, as required. These records include: the route traversed during monitoring; areas not monitored and the reason why they were not monitored; visual observations indicating elevated levels of LFG; location and concentrations of any reading above 500 ppm above background; and meteorological conditions at time monitoring was performed.
5. IN COMPLIANCE. Facility performs surface methane monitoring according to the instrument specifications and procedures specified in 40 CFR 60.755(d).

### VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility implements a program to monitor cover integrity on a monthly basis and make repairs as needed. Records are maintained.
2. IN COMPLIANCE. Facility maintains up-to-date records of design capacity, amount of solid waste in-place, and yearly waste acceptance rate. These records are maintained on site and were provided for review during the inspection. The landfill has a design capacity of 39.26 million tons (35.38 million Mg). The facility accepted 564,575 tons (513, 250 Mg) in 2014, and had 17,149,281 tons (15,590,256 Mg) of waste in-place as of December 31, 2014.
3. NOT APPLICABLE. This condition applies to landfills trying to demonstrate a capacity less than 2.5 million megagrams or 2.5 million cubic meters. Riverview Land Preserve's design capacity is greater than 2.5 million megagrams/2.5 million cubic meters.
4. IN COMPLIANCE. NMOC emission rate is calculated and recorded on an annual basis. A review of NMOC emissions reported to MAERS from 2011 through 2014 show approximately 40 tons of NMOC emissions each year during that time period.
5. NOT APPLICABLE. No liquids other than leachate were added to the waste during the compliance period.

### VII. Reporting

1. IN COMPLIANCE. Any deviations are reported promptly.
2. IN COMPLIANCE. Semi-Annual Deviation Reports are submitted by March 15 and September 15 of each year.
3. IN COMPLIANCE. Annual ROP Certification Reports are submitted by March 15 of each year.
4. NOT APPLICABLE. Facility has not removed or ceased operation of any control equipment.
5. NOT APPLICABLE. This condition applies to landfills which are closing. Riverview Land Preserve is an active landfill.
6. IN COMPLIANCE. Semi-Annual methane exceedance reports are submitted by March 15 and September 15 of each year.
7. IN COMPLIANCE. Semi-Annual SSM Reports are submitted by March 15 and September 15 of each year.

### IX. Other Requirements

1. NOT APPLICABLE. No capping or removal of the collection and control system was required during the compliance period.
2. IN COMPLIANCE. If surface monitoring shows methane exceedances, corrective actions are taken

and the area is re-monitored within 10 days. Corrective actions include adding surface cover and fine tuning wells. During the compliance period, the landfill did not have any areas which exceeded 500 ppm during re-monitoring after the initial exceedance. If corrective actions are taken, the monitored exceedance is not a violation of the operational requirements, per 40 CFR 60.755.

3. IN COMPLIANCE. Alternatives to the operational standards requested by the facility were approved by AQD in accordance with 40 CFR 60.752(b)(2). These requests and AQD's approvals can be found in the orange facility file.

4. IN COMPLIANCE. Facility conducted operations, monitoring, testing, reporting, and recordkeeping in accordance with the requirements of 40 CFR Part 60, Subpart WWW.

5. IN COMPLIANCE. Facility conducted operations, monitoring, testing, reporting, and recordkeeping in accordance with the requirements of 40 CFR Part 63, Subpart AAAA.

6. NOT APPLICABLE. Facility is required to apply controls as specified in 40 CFR 60.752(b)(2)(v) of Subpart WWW; therefore, the facility remains subject to 40 CFR Part 63, Subpart AAAA.

#### EU-ASBESTOS – The landfill is licensed to accept asbestos waste

NOT APPLICABLE. Riverview Land Preserve has not accepted and does not currently accept asbestos waste, so these conditions were not evaluated during this inspection. These conditions were added to the permit to allow the landfill the flexibility to accept asbestos waste, if it decides to do so in the future.

#### EUALGCS – Active landfill gas collection system at the landfill

##### III. Process/Operational Restrictions

1. IN COMPLIANCE. Gas collection system is automatically shut off if the control device is shutdown. Records are maintained in the event this occurs.

2. IN COMPLIANCE. Gas collection and control system operates in all active cells with waste in place for 5 or more years and closed cells with waste in place for 2 or more years. Details are maintained in the GCCS Design Plan.

3. IN COMPLIANCE. Wellheads are monitored monthly to verify that the gas control and collection system is operating under negative pressure. If wells demonstrate positive pressure, the wells are reported to AQD and corrective actions are taken, if required.

4. IN COMPLIANCE. Interior wellheads are monitored monthly to verify they are operating at a LFG temperature less than 55°C (131°F) and an oxygen level less than 5%. If a well exceeds either of these parameters, the facility records and reports the date, duration, and suspected cause of the exceedance. The facility may then make a request to AQD for an extended timeline to get the well into compliance or request to allow the well to operate at a higher temperature or oxygen level, if the facility is able to demonstrate that the elevated parameter does not cause fires or inhibit anaerobic decomposition.

5. IN COMPLIANCE. Gas collection and control system is operated in accordance with the provisions of 40 CFR 60.753, 40 CFR 60.755, 40 CFR 60.756, and the AQD approved gas collection and control system approved on May 30, 2006.

##### IV. Design/Equipment Parameters

1. IN COMPLIANCE. The gas collection and control system appears to be designed to sufficiently handle the gas produced by the landfill and minimize off-site migration of subsurface gas.

2. IN COMPLIANCE. LFG is routed to a control system (EU-TREATMENTSYS/FGTURBINES, with EUOPENFLARE1 and EUOPENFLARE2 as back-up control).

3. IN COMPLIANCE. The gas collection and control system is routinely modified with the installation, re-drilling, and decommissioning of wells, horizontal collectors, and other collection devices, to assure sufficient gas collection as the production of landfill gas evolves over time. Prior to making any modifications, RLP requests approval from AQD, stating what the modification will be and the reason for the modification. Copies of these requests and AQD's approvals can be found in the orange facility file.

4. IN COMPLIANCE. Wellheads are equipped with a sampling port and temperature measuring device to monitor operating parameters.

5. IN COMPLIANCE. GCCS Design Plan is approved by an engineer in DEQ's Solid Waste Program and an as-built site map is maintained showing the location of the wells. Wells are generally installed approximately 200-250 feet apart. Quarterly surface monitoring is performed assure LFG is being collected by the gas collection system and not escaping through the surface.

6. IN COMPLIANCE. Gas collection devices are constructed of approved materials; lateral and header pipes are made of high-density polyethylene (HDPE). Vertical wells are installed as to not damage underlying liners. Construction documentation records are maintained on site.

7. IN COMPLIANCE. Gas collection system appears sufficiently designed to handle the maximum LFG flow rate



to the control system. Flow rate of LFG is recorded.

#### VI. Monitoring/Recordkeeping

1. NOT IN COMPLIANCE. Wells are monitored monthly to verify they are operating under negative pressure. If positive pressure exists, the facility is required to take corrective actions within 5 days. If negative pressure cannot be obtained within 15 days of the initial measurement, the facility must either expand the gas collection system or obtain approval for an alternate corrective measure from AQD. If appropriate corrective actions are taken, the monitored exceedance is not considered a violation per 40 CFR 60.755. All positive pressure measurements or missed readings are reported to AQD. The facility did report that monthly monitoring was not performed on 13 wells in January 2014 and 4 wells in February 2014 due to severely cold temperatures freezing the access lid to the wells. All wells were monitored the following month and the missed readings were reported as deviations in the Semi-Annual Deviation Report and Annual ROP Certification Report.
2. NOT APPLICABLE. The gas collection and control system was installed in 1988.
3. NOT IN COMPLIANCE. Wells are monitored monthly to verify temperature and oxygen concentration. If a well exceeds either parameter, the facility must take corrective action within 5 days. If correction of the exceedance cannot be achieved within 15 days after the first measurement, the facility must either expand the gas collection system or obtain approval for an alternate corrective measure from AQD. If appropriate corrective actions are taken, the monitored exceedance is not considered a violation per 40 CFR 60.755. All exceedances and missed readings are reported to AQD. The facility did report that monthly monitoring was not performed on 13 wells in January 2014 and 4 wells in February 2014 due to severely cold temperatures freezing the access lid to the wells. All wells were monitored the following month and the missed readings were reported as deviations in the Semi-Annual Deviation Report and Annual ROP Certification Report.
4. IN COMPLIANCE. Facility maintains records of the control system, including gas generation flow rate and density of wells, horizontal collectors, surface collectors, and other extraction devices.
5. IN COMPLIANCE. Facility maintains records of the gas collection system, including a plot map showing each existing and planned collector in the system, and the installation date and location of each newly installed collector. A copy of this map was provided during the inspection and can be found in the orange facility file.
6. IN COMPLIANCE. Facility maintains records of all gas collection and control system exceedances.
7. IN COMPLIANCE. Facility maintains the initial and updated GCCS Plan, including the following information: a) map of the collection system showing all wells and collectors; b) density of wells, collectors, and other gas extraction devices; c) documentation of any asbestos or nondegradable waste; d) sum of gas generation flow rates from excluded areas; e) provisions for increasing gas mover equipment capacity, if necessary; f) provisions for the control of off-site migration; and g) dates of well installations, age of the waste in which the wells were installed, and date of initial waste placement in each portion of the landfill.

#### VII. Reporting

1. IN COMPLIANCE. Any deviations are reported promptly.
2. IN COMPLIANCE. Semi-Annual Deviation reports are submitted by the March 15 and September 15 of each year.
3. IN COMPLIANCE. Annual ROP Certification Reports are submitted by March 15 of each year.
4. IN COMPLIANCE. Semi-Annual gas collection and control system reports are submitted by March 15 and September 15 of each year.
5. IN COMPLIANCE. Semi-Annual SSM reports are submitted by March 15 and September 15 of each year.

#### IX. Other Requirements

1. IN COMPLIANCE. If surface monitoring shows methane exceedances, corrective actions are taken and the area is re-monitored within 10 days. Corrective actions include adding surface cover and fine tuning wells. During the compliance period, the landfill did not have any areas which exceeded 500 ppm during re-monitoring after the initial exceedance. If corrective actions are taken, the monitored exceedance is not a violation of the operational requirements, per 40 CFR 60.755.
2. IN COMPLIANCE. The provisions of 40 CFR Part 60, Subpart WWW apply at all times, except during periods of start-up, shutdown, or malfunction, provided the duration of the start-up, shutdown, or malfunction does not exceed 5 days. The facility reported no start-up, shutdown, or malfunctions exceeding 5 days during the compliance evaluation period.
3. NOT APPLICABLE. The control system, as installed, meets the requirements of S.C. IV.5, IV.6, and IV.7, so the facility has not requested an alternate control system design.
4. IN COMPLIANCE. Facility maintains and implements an SSM Plan for EUALGCS.

EUBIOGASTREATSYS – This unit treats LFG before it is used in the biogas conditioning system (BioCNG) to produce biogas-based fuel to power compressed natural gas (CNG) vehicles.

### III. Process/Operational Restrictions

1. IN COMPLIANCE. Facility operates the treatment system at all times when the collected gas is routed to the BioCNG system.
2. IN COMPLIANCE. Emissions from the treatment system are routed to the control system, as required by 40 CFR 60.752(b)(2)(iii)(A) or (B).
3. IN COMPLIANCE. Emissions from the treatment system are sent to either the turbines or flares for control, in accordance with the provisions of 40 CFR 60.753(e) and (f).

### IV. Design/Equipment Parameters

1. IN COMPLIANCE. Treatment system is designed, installed, and operated as approved by AQD.

### VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility maintains records of all control system exceedances of the operational standards in 40 CFR 60.753(e) and (f).
2. IN COMPLIANCE. Facility maintains records of all preventative maintenance performed in accordance with the Preventative Maintenance Plan pursuant to S.C. IX.3.

### VII. Reporting

1. IN COMPLIANCE. Any deviations are reported promptly. Facility has not reported any deviations associated with this process.
2. IN COMPLIANCE. Semi-Annual Deviation Reports are submitted by March 15 and September 15 of each year.
3. IN COMPLIANCE. Annual ROP Certification Reports are submitted by March 15 of each year.
4. IN COMPLIANCE. Semi-Annual reports for the landfill gas treatment system are submitted by March 15 and September 15 of each year.

### IX. Other Requirements

1. IN COMPLIANCE. The provisions of 40 CFR Part 60.755 apply at all times, except during periods of start-up, shutdown, or malfunction, provided the duration of the start-up, shutdown, or malfunction does not exceed 1 hour. The facility reported no start-up, shutdown, or malfunctions exceeding 1 hour for this process during the compliance evaluation period.
2. IN COMPLIANCE. Facility maintains and implements an SSM Plan.
3. IN COMPLIANCE. Facility maintains and implements a Preventative Maintenance Plan (PMP) for EUBIOGASTREATSYS, dated May 2013.

## EUOPENFLARE1 – 2,131 CFM non-assisted open flare for the control of LFG

### I. Emission Limits

1. IN COMPLIANCE. Visible emissions testing using USEPA Method 22 was performed on September 21, 2004, showed no visible emissions for the flare. No visible emissions were observed during my inspection on April 27 and 28, 2015.

### II. Material Limits

1. IN COMPLIANCE. Net heating value of LFG is greater than 200 BTU/scf. Performance testing on September 21, 2004, showed a heating value of 452.5 BTU/scf (16.86 MJ/scm).

### III. Process/Operational Restrictions

1. IN COMPLIANCE. EUOPENFLARE1 is operated in accordance with 40 CFR 60.18. Records are maintained to demonstrate compliance.
2. IN COMPLIANCE. EUOPENFLARE1 is operated at all times when collected LFG is routed to it.
3. IN COMPLIANCE. EUOPENFLARE1 is designed for and operated with no visible emissions. No visible emissions were observed from the flare while I was on site on April 27 and 28, 2015.
4. IN COMPLIANCE. EUOPENFLARE1 is operated with the flame present at all times.
5. IN COMPLIANCE. Net heating value of LFG is greater than 200 BTU/scf (7.45 MJ/scm). Performance testing on September 21, 2004, showed a heating value of 452.5 BTU/scf (16.86 MJ/scm).
6. IN COMPLIANCE. Exit velocity of the flare is less than 60 ft/sec. Performance testing on September 21, 2004, demonstrated an exit velocity of 57.42 ft/sec.
7. NOT APPLICABLE. EUOPENFLARE1 is not air-assisted.
8. IN COMPLIANCE. EUOPENFLARE1 is operated whenever LFG is routed to it.
9. IN COMPLIANCE. Control system meets requirements of 40 CFR 60.752(b)(2)(iii). Gas collection system automatically shuts down if the control system is inoperable.

#### V. Testing/Sampling

1. IN COMPLIANCE. Net heating value of LFG was determined using USEPA Method 3C during performance testing on September 21, 2004.
2. IN COMPLIANCE. Visible emissions observations using USEPA Method 22 was performed on September 21, 2004.

#### VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. EUOPENFLARE1 is equipped with a heat sensing device to indicate the continuous presence of a flame.
- 2 and 3. IN COMPLIANCE. Information and records relating to the design and operation of EUOPENFLARE1 are maintained as required. These records include flare type, VE readings, heat content determination, flow rate measurements, exit velocity determinations made during the performance test, and monitoring of pilot flame.
4. IN COMPLIANCE. The following records are maintained for EUOPENFLARE1: a) records indicating presence of flare pilot flame; b) net heating value of gas being combusted; c) actual exit velocity of the flare; d) maximum permitted velocity; and e) maximum permitted velocity for air-assisted flares.

#### VII. Reporting

1. IN COMPLIANCE. Any deviations are reported promptly. Facility has not reported any deviations associated with this process.
2. IN COMPLIANCE. Semi-Annual Deviation Reports are submitted by March 15 and September 15 of each year.
3. IN COMPLIANCE. Annual ROP Certification Reports are submitted by March 15 of each year.
4. IN COMPLIANCE. Semi-annual reports for the landfill gas treatment system are submitted by March 15 and September 15 of each year.
5. IN COMPLIANCE. Semi-annual SSM Reports are submitted by March 15 and September 15 of each year.
6. NOT APPLICABLE. Facility has not removed EUOPENFLARE1.

#### XI. Other Requirements

1. IN COMPLIANCE. EUFLARE1 did not have any start-up, shutdown, or malfunctions exceeding 1 hour during the compliance evaluation period.
2. IN COMPLIANCE. Facility demonstrates compliance with 40 CFR Part 63 Subpart AAAA and 40 CFR Part 60 Subpart WWW through testing, monitoring of the collection system, continuous parameter monitoring. Facility maintains and implements a written SSM Plan for EUOPENFLARE1.

### EUOPENFLARE2 – 4,700 CFM non-assisted open flare for control of LFG

#### I. Emission Limits

1. IN COMPLIANCE. Visible emissions testing using USEPA Method 22 was performed on June 24, 2013, showed no visible emissions for the flare. No visible emissions were observed during my inspection on April 27 and 28, 2015.

#### II. Material Limits

1. IN COMPLIANCE. Net heating value of LFG is greater than 200 BTU/scf. Performance testing on June 24, 2013, showed a heating value of 463.8 BTU/scf (17.28 MJ/scm).

#### III. Process/Operational Restrictions

1. IN COMPLIANCE. EUOPENFLARE2 is operated in accordance with 40 CFR 60.18. Records are maintained to demonstrate compliance.
2. IN COMPLIANCE. EUOPENFLARE2 is operated at all times when collected LFG is routed to it. Operation records are maintained to demonstrate compliance.
3. IN COMPLIANCE. EUOPENFLARE2 is designed for and operated with no visible emissions. No visible emissions were observed from the flare while I was on site on April 27 and 28, 2015.
4. IN COMPLIANCE. EUOPENFLARE2 is operated with the flame present at all times.
5. IN COMPLIANCE. Net heating value of LFG is greater than 200 BTU/scf (7.45 MJ/scfm). Performance testing on June 24, 2013, showed a heating value of 463.8 BTU/scf (17.28 MJ/scm).
6. IN COMPLIANCE. Exit velocity of the flare is less than 60 ft/sec. Performance testing on June 24, 2013, demonstrated an exit velocity of 24.8 ft/sec.
7. NOT APPLICABLE. EUOPENFLARE2 is not air-assisted.
8. IN COMPLIANCE. EUOPENFLARE2 is operated at all times when LFG is routed to it to comply with the provisions of 40 CFR 60 Subpart A.

9. IN COMPLIANCE. Control system meets requirements of 40 CFR 60.752(b)(2)(iii). Gas collection system automatically shuts down if the control system is inoperable.

#### V. Testing/Sampling

1. IN COMPLIANCE. Net heating value of LFG was determined using USEPA Method 3C, Alternate 42 during performance testing on June 24, 2013. Alternate 42 allows for one 30-minute sample supplemented by two methane readings from a hand-held combustible gas meter. Request to use Alternate 42 was approved by AQD.  
2 and 3. IN COMPLIANCE. Visible emissions observations using USEPA Method 22, Alternate 42 was performed on June 24, 2013. Alternate 42 allows for a 30-minute visible emission reading for LFG. Request to use Alternate 42 was approved by AQD.

#### VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. EUOPENFLARE2 is equipped with a heat sensing device to indicate the continuous presence of a flame.  
2 and 3. IN COMPLIANCE. Information and records relating to the design and operation of EUOPENFLARE2 are maintained as required. These records include flare type, VE readings, heat content determination, flow rate measurements, exit velocity determinations made during the performance test, and monitoring of pilot flame.  
4. IN COMPLIANCE. The following records are maintained for EUOPENFLARE2: a) records indicating presence of flare pilot flame; b) net heating value of gas being combusted; c) actual exit velocity of the flare; d) maximum permitted velocity; and e) maximum permitted velocity for air-assisted flares.

#### VII. Reporting

1. IN COMPLIANCE. Any deviations are reported promptly. Facility has not reported any deviations associated with this process.  
2. IN COMPLIANCE. Semi-Annual Deviation reports are submitted by March 15 and September 15 of each year.  
3. IN COMPLIANCE. Annual ROP Certification Reports are submitted by March 15 of each year.  
4. IN COMPLIANCE. Semi-Annual reports for the landfill gas treatment system are submitted by March 15 and September 15 of each year.  
5. IN COMPLIANCE. Semi-Annual SSM Reports are submitted by March 15 and September 15 of each year.

#### XI. Other Requirements

1. NOT IN COMPLIANCE. EUOPENFLARE2 reported numerous instances of start-up, shutdown, and malfunctions exceeding 1 hour during the compliance evaluation period. EUOPENFLARE2 is considered to be a secondary control for the turbines, with EUOPENFLARE1 used as a back-up for EUOPENFLARE2. During times when EUOPENFLARE2 was inoperable, any LFG not burned in the turbines was burned in EUOPENFLARE1, so these occurrences did not cause uncontrolled emissions to be discharged to the atmosphere.  
2. IN COMPLIANCE. Facility demonstrates compliance with 40 CFR Part 63 Subpart AAAA and 40 CFR Part 60 Subpart WWW through testing, monitoring of the collection system, continuous parameter monitoring. Facility maintains and implements a written SSM Plan for EUOPENFLARE2.  
3. IN COMPLIANCE. Facility maintains compliance with 40 CFR Part 60 Subpart A and WWW ("Standard of Performance for Municipal Solid Waste Landfills). Records are maintained to demonstrate compliance.  
4. IN COMPLIANCE. Facility maintains compliance with 40 CFR Part 63 Subpart A and AAAA ("National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills"). Records are maintained to demonstrate compliance.

#### D. Flexible Group Conditions

FGCOLDCLEANERS-S2 – Any cold cleaner that is grandfathered or exempt from Rule 201

#### II. Material Limits

1. IN COMPLIANCE. Facility uses a product called "Safety-Kleen Premium Solvent (Virgin and Recycled)" in EUCOLDCLEANER-S2. According to the MSDS, this contains 100% petroleum distillates and no halogenated compounds. The permit does not allow more than 5% (by weight) of several halogenated compounds, so this condition is in compliance.

#### III. Process/Operational Restrictions

1. IN COMPLIANCE. According to the facility, proper cleaning procedures are followed.  
2. IN COMPLIANCE. According to the facility, routine maintenance is performed in accordance with manufacturer recommendations.

#### IV. Design/Equipment Parameters

1. IN COMPLIANCE. Cold cleaner is used to clean metal parts and emissions are released to the general in-plant environment.
2. IN COMPLIANCE. Cold cleaner is equipped with an area to drain parts.
3. IN COMPLIANCE. Cold cleaner is equipped with a lid and the lid was closed during the inspection.
4. IN COMPLIANCE. Lid is mechanically assisted.
5. IN COMPLIANCE. Facility maintains records to demonstrate compliance with this condition.

#### VI. Monitoring/Recordkeeping

1. IN COMPLIANCE. Facility states that temperatures are monitored and recorded when solvent is heated.
2. IN COMPLIANCE. Appropriate records are maintained.
3. IN COMPLIANCE. Written operating procedures are maintained and posted.
4. IN COMPLIANCE. Waste solvent disposed of in a proper manner.

#### VII. Reporting

1. IN COMPLIANCE. Any deviations are reported promptly. Facility has not reported any deviations associated with this process.
2. IN COMPLIANCE. Semi-Annual Deviation reports are submitted by March 15 and September 15 of each year.
3. IN COMPLIANCE. Annual ROP Certification Reports are submitted by March 15 of each year.

### **FINAL COMPLIANCE DETERMINATION:**

Based on this inspection, Riverview Land Preserve is not in compliance with ROP No. MI-ROP-M4469-2015 and applicable State and federal air rules.

#### Section 1: Riverview Energy Systems (RES)

Riverview Energy Systems was not in compliance with the following conditions of MI-ROP-M4469-2015, Section 1:

- General Condition 24: Facility reported inaccurate SO<sub>2</sub> emissions from EUTURBINE1 and EUTURBINE2 to the Michigan Air Emissions Reporting System (MAERS) for 2011, 2012, 2013, and 2014.
- FGTURBINES, Special Condition I.5: EUTURBINE1 and EUTURBINE2 each exceeded the allowable SO<sub>2</sub> limit of 17.34 tons per 12-month rolling time period. EUTURBINE1 exceeded this limit 46 times from June 2011 and March 2015; EUTURBINE2 exceeded this limit 35 times from July 2011 through March 2015.
- FGTURBINES, Special Condition V.2 and Appendix 9-1: Facility deviated from the fuel sampling schedule within Appendix 9-1 of the ROP by failing to perform fuel sampling during the first quarter, 2013.
- FGTURBINES, Special Conditions VII.1 through 3: The Responsible Official submitted annual and semi-annual ROP certifications from 2011 through 2013 which failed to promptly report deviations and emission exceedances which should have been reported based on reasonable inquiry.

In addition, Riverview Energy Systems was not in compliance with the following State rules:

- R 336.1201(1)(a): RES failed to obtain a Permit to Install prior to making a modification to EUTURBINE1 and prior to making a modification to EUTURBINE2.
- R 336.2908(3) and (5): RES has constructed and is operating a major modification, as defined in R 336.2901(s), for SO<sub>2</sub> located within an SO<sub>2</sub> nonattainment area without complying with the lowest achievable emission rate (LAER) for SO<sub>2</sub> and without providing emission offsets for SO<sub>2</sub>.

As a result of these violations, Riverview Energy Systems was issued a Violation Notice on May 11, 2015, and was referred to AQD Enforcement on June 19, 2015.

#### Section 2: Riverview Land Preserve (RLP)

Riverview Land Preserve was not in compliance with the following conditions of MI-ROP-M4469-2015, Section 2:

