

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

N599132282

FACILITY: Citizens Disposal, Inc.		SRN / ID: N5991
LOCATION: 2361 W. Grand Blanc Rd., GRAND BLANC		DISTRICT: Lansing
CITY: GRAND BLANC		COUNTY: GENESEE
CONTACT: Robb Moore , Environmental Manager		ACTIVITY DATE: 11/03/2015
STAFF: Julie Brunner	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Performed a scheduled inspection to determine compliance with MI-ROP-N5991-2010.		
RESOLVED COMPLAINTS:		

On November 3, 2015, DEQ-AQD staff conducted a scheduled inspection of Citizens Disposal, Inc. and Granger Electric (N5991). The facility operates per the conditions of Renewable Operating Permit (ROP) No. MI-ROP-N5991-2010 which expires on December 21, 2015. The ROP renewal application is currently under technical review. The ROP has two sections. Section 1 covers processes owned and operated by Citizens Disposal, Inc (Citizens). This includes the landfill operations, two (2) landfill gas flares, and a shop. Section 2 covers two landfill gas-fired engines and a landfill gas treatment system that is owned and operated by Granger Electric (Granger). Granger also operates five (5) exempt landfill gas-fired engines that are not currently listed in the ROP.

Operations owned and operated by Citizens and Granger comprises a single stationary source. This is a mixed use area site surrounded by farm land, residential, industry, and the highway (I-23) on the west side of the source.

#### Facility Description:

Citizens 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 MSW 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 (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), and nonmethane organic compounds (NMOC).

There are two sides to the landfill. An inactive (closed) landfill owned by Waste Management (WM) dates back to the 1940s. The active landfill is owned and operated by Republic Services since 1989. A landfill gas collection system has been installed to collect the landfill gas for both sides. For the WM side, gas collection wells were installed in 1994. Not much gas is collected from the inactive landfill at about 300 to 400 cubic foot (cf) per year. For the active landfill, gas collection wells are installed as appropriate. The 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 spark ignition (SI) reciprocating internal combustion engines (RICE) in the Granger owned and operated gas-to-electric plant. Each engine turns a crankshaft that spins a rotor in an electromagnetic field creating an electric current used to generate electricity. The engines in the gas-to-electric plant are located in two buildings. (Plant 1 and Plant 2 for reference in this report.) Plant 1 was built in ~1993 and has bays for five engines. Only four engines are currently in the Plant 1 building. A cat-in-the-box (CITB) sits beside Plant 1. It is a Caterpillar (CAT) 3516 on a flatbed truck trailer, and it is a “temporary” engine that has been on-site since 2010. The engines in Plant 1 are currently operated as exempt under Rule 285(g). Plant 2 has bays for three engines and two CAT 3520C were permitted on PTI 331-08. These two engines were installed in August of 2012.

When the landfill gas is not routed to the engines, such as during engine maintenance, it is burned in one of two open flares. The open flares are used as back-up control devices to combust the landfill gas. One flare, Grof flare, is capable of combusting between 600 – 800 cfm of gas and is located by Plant 1. The other flare, a 3000 cfm Zinc flare is located near the base of the landfill. Landfill gas can be directly routed to the Zinc flare. Although the Grof flare is operated by Granger, both flares are covered under Section 1 of the ROP.

Prior to combustion in the engines, landfill gas is sent to a treatment system. The treatment system has been in place since the landfill was constructed. The treatment system consists of a strainer and knockout scrubber to remove water vapor from the gas. The gas then passes through a compressor and heat exchangers. Finally, particulate is removed from the gas when it passes through a 10 micron particle filter.

#### Regulatory Overview:

Citizens Disposal, Inc. and Granger Electric (N5991) 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. Actual emissions of 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 (GHGs) in carbon dioxide equivalents (CO<sub>2</sub>e) are greater than 100,000 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, and the landfill has a design capacity greater than or equal to 2.5 million megagrams (Mg) and 2.5 million cubic meters. 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. Two of the engines, EU-ENGINE6 and EU-ENGINE7, 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 emission and operating limitations. The five (5) exempt engines, EU-ENGINE6 and EU-ENGINE7 are affected sources subject to 40 CFR 63, Subpart ZZZZ. The exempt engines are existing stationary RICE. EU-ENGINE6 and EU-ENGINE7 are new stationary RICE. The following is a list of emission units/flexible groups that are on the ROP No. MI-ROP-N5991-2010:**

Emission Unit ID	Emission Unit Description	Install/Modify Date	App. Req.
<b>SECTION 1</b>			
EULANDFILL (TREAT)	This emission unit represents the general Municipal Solid Waste (MSW) Landfill	12/13/95	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EU ACTIVECOLL	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 WWW, 40 CFR 63: Subpart AAAA
EU GROFFLARE	Open flare combustor without enclosure or shroud	4/1/00	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EU ZINKFLARE	Open flare combustor without enclosure or shroud	2/3/09	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EU ASBESTOS	Any active or inactive asbestos disposal site.	1/1/81	40 CFR 61: Subpart M
FGCOLDCLEANER	Any cold cleaner that is grandfathered or exempt from	NA	R 281(h) or R 285(r)(iv)

	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.		
FGRULE290	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 290.	NA	R 290
<b>SECTION 2</b>			
EU TREATSYS	Processing equipment that treats collected landfill gas for subsequent sale or use.	12/13/95	40 CFR 60: Subparts WWW, 40 CFR 63: Subpart AAAA
EU-ENGINE6 (GZ549)	CAT 3520 (2,233 hp) landfill gas-fired reciprocating engine, 1.6 MW, 14.67 MMBtu/hr	8/1/12	40 CFR 60: Subpart JJJJ, 40 CFR 63: Subpart ZZZZ
EU-ENGINE7 (GZ551)	CAT 3520 (2,233 hp) landfill gas-fired reciprocating engine, 1.6 MW, 14.67 MMBtu/hr	8/1/12	40 CFR 60: Subpart JJJJ, 40 CFR 63: Subpart ZZZZ
<b>Exempt Engines</b>			
CITB (16) (4E131)	One temporary CAT 3516 (1,138 hp) landfill gas-fired engine manufactured in 1993, 9.5 MMBtu per hour.	8/4/10	40 CFR 63: Subpart ZZZZ
#1(3R274), #2 (4E124), #3 (4E468), #4 (3R889) #5	Five exempt CAT 3516 (1,138 hp) landfill gas-fired engines, each 9.5 MMBtu per hour, 0.8 MW each.	12/22/13, 8/2010, 3/14, 4/1/00 Removed	R 285(g), 40 CFR 63: Subpart ZZZZ

**MAERS Emission Totals for the 2014 Reporting Year:**

**EULANDFILL:**  
 NMOC – 11.3 tpy  
 PM10, filterable – 7.0 tpy

**EUGROFFLARE:**  
 CO – 0.63 tpy  
 NOx – 0.31 tpy  
 PM10/2.5, primary – 0.016 tpy  
 SO2 – 0.18 tpy  
 VOC – 0.019 tpy

**EUZINKFLARE:**  
 CO – 0.71 tpy  
 NOx – 0.28 tpy  
 PM10/2.5, primary – 0.012 tpy

SO<sub>2</sub> – 0.16 tpy  
VOC – 0.016 tpy

Exempt Engines (CAT 3516s):

CO – 153 tpy  
NO<sub>x</sub> – 99 tpy  
PM<sub>10</sub>, filterable – 7.8 tpy  
SO<sub>2</sub> – 36.7 tpy  
VOC – 25.7 tpy

FGENGINES (EU-ENGINE6 and EU-ENGINE7):

CO – 125.9 tpy  
NO<sub>x</sub> – 42 tpy  
PM<sub>10</sub>, filterable – 4.7 tpy  
SO<sub>2</sub> – 14.5 tpy  
VOC – 42 tpy

Arrival:

On November 3rd, I conducted an inspection of the landfill and gas-to-electric plant. I arrived at the office at ~9:00 AM. A pre-inspection meeting was conducted with Mr. Robb Moore (Environmental Manager) and Mr. Bob Thornton (Operations Manager) both of Republic Services. We discussed the operations at the landfill and the requirements of the ROP. The landfill has around 25 years of capacity left at last check and is currently receiving about 1,100 tons per day of waste.

No composting is done at the facility.

The facility monitors each wellhead for temperature, pressure and oxygen (O<sub>2</sub>) levels monthly as required by NSPS, MACT, and the ROP. The NSPS requires that wellheads on collection systems operate at below required temperatures, pressure and oxygen (O<sub>2</sub>) levels. An exceedance of NSPS limits could indicate the need to draw additional gas from the area to prevent gas migration, the surface liner may have a leak allowing air infiltration, or in the case of rising temperatures, a possible fire. Requests for variances from operating parameters for specific wells can be made if tuning the wellheads does not address the exceedances in operating parameters. Robb indicated that no recent requests for variances had been submitted. The last alternative timeline variance request was made for a horizontal well with elevated O<sub>2</sub>. The request was made on June 11, 2015 and approved by AQD on July 6, 2015.

Surface CH<sub>4</sub> concentration scans of the landfill are done quarterly as required by NSPS, MACT, and the ROP. The NSPS limit for CH<sub>4</sub> is 500 part per million (ppm). An exceedance of NSPS limits could indicate the need to draw additional gas from the area for better capture and to prevent gas migration off-site. The 1st 2015 Semi-Annual ROP Report indicated that no locations initially exceeded the 500 ppm on the surface scans. Four (4) new vertical gas collection wells and one (1) replacement vertical gas collection well were installed in the 2nd quarter of 2015.

The facility accepts both friable and non-friable asbestos. Friable asbestos is buried as soon as possible. The location of the friable asbestos is plotted using GPS, and gas collection systems are not installed in areas where asbestos 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.

There is a parts washer located in the shop. It is included as FGCOLD CLEANER in the ROP. Robb could not identify any equipment operating under Rule 290 exemptions. There are some exempt Rule 282 heaters at the facility including one propane heater for the office and a Salamander portable heater in the shop. There are 2 – 1000 gallon, and 1 – 500 gallon diesel fuel tanks for equipment refueling on site. These are occasionally moved around the landfill operations for refueling of off-road vehicles. There are also 2 – 335 gallon hydraulic oil tanks in the shop that were identified. The oil tanks at the facility are exempt under Rule 284(i).

The drive around the operations of the landfill including the working face was done with Robb Moore and Bob Thornton. We drove first by the inactive (closed) landfill owned by Waste Management and the Zink Flare which was not operating. While driving around the circumference of the landfill, risers for the leachate collection system and the electric powered leachate pumps were noted. Trash pickers were observed around the landfill operations. Little odor was noted around the base of the working face. At the working face of the landfill, the odor was not too bad. Wind speed was light and offsite potential for odors was observed to be low. At night, the

working face is covered with tarps. Approximately 100 to 200 trash trucks per day make their way to the working face of the landfill and the scales close at 4:00 PM.

Next, I proceeded to the Granger operated gas-to-electric plant where I meet with Mr. Doug Hine and Mr. Tony Saintmarie both Granger operations technicians. The GLOF flare was not currently operating but was operating the day before when all the engines were shutdown. The GLOF flare had nitrogen tanks beside it which is the gas used to ignite the pilot light on the flare. The 1st 2015 semi-annual ROP SSM Report had listed some malfunctions of the flare due to empty nitrogen tanks.

The technicians provided a current list of the engine and equipment numbers at the facility. Grange maintains a fleet of engines for "like-kind" engine replacement or engine swapping. All supporting documentation for this action should be maintained on-site. AQD staff did not request to view it during this inspection as it had been requested as part of the ROP renewal application. The "like-kind" engine replacements have been performed for engines #1, #2, and #3. And, the engine that was #5 was pulled, overhauled and replaced engine #3. The engine bay for #5 is currently empty in Plant 1. It sounds like Granger would like to remove the temporary engine (CITB(16)) and install another CAT 3520 in the remaining bay at Plant 2. The two engines, EUENGINE6 and EUENGINE7, which were permitted on PTI 331-08 are installed and operating, but Plant 2 has room for three total engines. Installation of a third engine in Plant 2 will require a PTI, and possible PSD review of the project.

A copy of plant maintenance logs and downtime for the months of September and October were supplied by the operators for the engines. The logs include the date, time, event description or reason, equipment number, and equipment operating time in hours. Events logged for the months of September and October included substation tests for engines #1 to #4, CIB(16), and EUENGINE6 and EUENGINE7; plugs, oil and filter changes; PRV install; shutdowns; braker trips; #1 top end overhaul; and #7 replacement of starter drive.

All engines were operating in the two plants at the time of the inspection. A snap shot of the PLC computer screen with the engine operations was obtained. All operating data is sent electronically to "headquarters" and AQS (consultant). The operating data includes kilowatt-hours (kW-hr), pressure, and operating hours for the engines. The data does not appear to be maintained on-site and was requested to be provided from Mr. Dan Zimmerman (Granger Director of Operations).

The following data from the digital display in the control room were recorded at the time of inspection:

ENGINE #1 = 805 kW  
ENGINE #2 = 780 kW  
ENGINE #3 = 807 kW  
ENGINE #4 = 714 kW (planning an electrical upgrade that should increase output)  
CITB(16) = digital reading is outside and no reading taken  
EUENGINE6 = 1563 kW  
EUENGINE7 = 1572 kW

No visible emissions were observed from the engine exhaust stacks.

Two engines, EU-ENGINE6 and EU-ENGINE7 are scheduled for testing on December 15, 2015. The test plan was received on November 9, 2015. Both engines will be tested for NOx, CO, and VOC mass emissions in pounds per hour and grams per brake horsepower-hour to demonstrate compliance with the conditions on ROP No. MI-ROP-N5991-2010.

#### Departure:

No violations or concerns were identified at the time of inspection. Records not obtained during the inspection were to be emailed. I departed the facility at approximately 11:20 AM.

#### Records Review:

The following records were requested and/or obtained during the inspection:

1. The Historical Wellfield Monitoring Data (6-month rolling) from April 2015 to September 2015.
2. Gas flow records and flare operation for EUGROFFLARE.
3. The 12-month rolling gas flow, heat input (MMBtu), and CO and SOx emissions data for EUZINKFLARE.
4. The landfill gas usage and kilowatt output for the last 12-months up to October 2015 for EU-ENGINE5 and EU-ENGINE6 (FGENGINES).

For EUZINKFLARE, the 12-month rolling landfill gas usage in October 2015 was 16.90 million (MM) cf and the

permit limit is 1,570 MMcf per 12-month rolling time period. CO emissions based on a 12-month rolling time period up to October 2015 were 1.56 tpy, and SOx emissions based on a 12-month rolling time period up to October 2015 were 0.75 tpy. The CO emission limit is 146 tpy and SOx emission limit is 48 tpy. EUZINKFLARE is currently being operated well below permit limits.

For FGENGINES, the 12-month rolling kW-hr output in October 2015 was 12.9 MM kW-hr. The output limit is 14 MM kW-hr/12-month rolling.

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-N5991-2010 were identified with this scheduled inspection.

NAME John L. Banner DATE 11/24/15 SUPERVISOR B. M.

