

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

N599163398

<b>FACILITY:</b> Citizens Disposal, Inc.		<b>SRN / ID:</b> N5991
<b>LOCATION:</b> 2361 W. Grand Blanc Rd., GRAND BLANC		<b>DISTRICT:</b> Lansing
<b>CITY:</b> GRAND BLANC		<b>COUNTY:</b> GENESEE
<b>CONTACT:</b> Robb Moore , Environmental Manager		<b>ACTIVITY DATE:</b> 06/22/2022
<b>STAFF:</b> Julie Brunner	<b>COMPLIANCE STATUS:</b> Non Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> Performed a scheduled inspection to determine compliance with ROP No. MI-ROP-N5991-2016 and as part of an FCE. Ongoing violation of Rule 201 due to increase in sulfur content of the landfill gas.		
<b>RESOLVED COMPLAINTS:</b>		

On June 22, 2022, AQD staff conducted a scheduled inspection of Citizens Disposal, Inc. and Energy Developments LLC of Grand Blanc (former Granger Electric of Grand Blanc) as part of an FCE. The facility operates per the conditions of Renewable Operating Permit (ROP) No. MI-ROP-N5991-2016. 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 seven (7) landfill gas-fired engines, and a landfill gas treatment system that is owned and operated by Energy Developments LLC of Grand Blanc (EDGB). The last inspection of the facility was in November of 2019.

Operations owned and operated by Citizens and EDGB comprises a single stationary source. The landfill is located in a mixed-use area surrounded by farmland, residential, industry, and the highway (I-23) on the west side of the source.

**Contacts:**

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**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 originally owned and operated by Waste Management (WM) dates back to the 1940s. The active landfill (Citizens Disposal) is owned and operated by Republic Services since 1989. The landfill has been constructed in 3 construction phases.

Phase 1 – Cell A (original cell constructed in the early 1990's)

Phase 2 – Cells A – F

Phase 3 – Cells A – D

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 cubic foot (cf) per year. For the active landfill, gas collection wells are installed as appropriate. The system utilizes gas mover equipment to route 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 EDGB 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. All bays are now filled in the Plant 1 building. The cat-in-the-box (CITB) that had been on-site since 2010 has been removed and a Caterpillar (CAT) 3516 has been installed in what was empty bay 5. The engines in Plant 1 are currently operated as exempt under Rule 285 (2)(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 600 cfm of gas and is located by Plant 1. The other flare, a 3,000 cfm Zink flare is located near the base of the landfill. Landfill gas can be directly routed to the

**Zink flare.** For Grof flare operation, gas first goes to the gas-to-energy plant and they route excess gas to the Grof flare when they do not have the capacity in the engine plant. Although the Grof flare is operated by EDGB, Republic owns and maintains both flares. 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 1995 according to the dates in the ROP. 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 and EDGB are currently part of 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. An administratively complete ROP renewal application was submitted on May 10, 2021 (Section 1) and June 17, 2021 (revised Section 2).

The following federal regulations for air pollutants currently apply 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 (GCCS) were subject to the requirements of Subpart WWW.

On June 21, 2021, the facility became subject to the Federal Plan Requirements for Municipal Solid Waste Landfills That Commenced Construction on or Before July 17, 2014, and Have Not Been Modified or Reconstructed Since July 17, 2014, as specified in 40 CFR 62, Subpart OOO. Citizens is considered a legacy landfill under the Federal Plan. Michigan is not currently the authorized representative and is implementing and enforcing this regulation through the ROP. The requirements for 40 CFR 62,

Subpart 000 will be added in ROP renewal and requirements for 40 CFR 60, Subpart WWW will be removed.

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, EUENGINE6 and EUENGINE7, 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 did require such landfills to meet the startup, shutdown, and malfunction (SSM) requirements of 40 CFR Part 63, Subpart A, General Provisions, but now the standard applies at all times. After September 28, 2021, the permittee must comply with all applicable provisions per 40 CFR 63.1930(b). The permittee has opted to comply with the provisions for the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961) for a Municipal Solid Waste Landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c).

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 (EUENGINE1 – EUENGINE5) and EUENGINE6 and EUENGINE7 are affected sources subject to 40 CFR 63, Subpart ZZZZ. The engines, EUENGINE1 – EUENGINE4, are existing stationary RICE. EUENGINE5, EUENGINE6, and EUENGINE7 are new stationary RICE. The following is a list of emission units/flexible groups that are on ROP No. MI-ROP-N5991-2016:

Emission Unit ID	Emission Unit Description	Install/ Modify Date	App. Req.
SECTION 1			

Emission Unit ID	Emission Unit Description	Install/ Modify Date	App. Req.
EULANDFILL	This emission unit represents the general Municipal Solid Waste (MSW) Landfill	12/13/95	<del>40 CFR 60: Subparts WWW,</del> 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	<del>40 CFR 60: Subparts WWW,</del> 40 CFR 63: Subpart AAAA
EU GROFFLARE	600 cfm open flare combustor without enclosure or shroud	4/1/00	<del>40 CFR 60: Subparts WWW,</del> 40 CFR 63: Subpart AAAA
EU ZINKFLARE	3,000 cfm open flare combustor without enclosure or shroud	2/3/09	<del>40 CFR 60: Subparts WWW,</del> 40 CFR 63: Subpart AAAA
EU ASBESTOS	Any active or inactive asbestos disposal site.	1/1/81	40 CFR 61: Subpart M
FGCOLDCLEANER (One located in the shop.)	Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 281(2)h) or Rule 285 (2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1,	?	Rule 281(2) (h)

Emission Unit ID	Emission Unit Description	Install/ Modify Date	App. Req.
	1979. New cold cleaners were placed into operation on or after July 1, 1979.		
FGRULE290  (no emission units operating under Rule 290 and this group should be removed at ROP renewal.)	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 290.	NA	Rule 290
<b>SECTION 2</b>			
EUTREATSYS	Processing equipment that treats collected landfill gas for subsequent sale or use.	12/13/95	<del>40 CFR 60: Subparts WWW,</del>  40 CFR 63: Subpart AAAA
EUENGINE6 (GZJ551)	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
EUENGINE7 (GZJ197)	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
<u>Exempt Engines</u>			
EUENGINE1 (3RC274)	Caterpillar 3516 landfill gas-fired reciprocating engine located in Plant 1.	07-27-1994	Rule 285(2) (g), 40 CFR 63: Subpart ZZZZ

Emission Unit ID	Emission Unit Description	Install/ Modify Date	App. Req.
EUENGINE2* (4EK464)	Caterpillar 3516 landfill gas-fired reciprocating engine in Plant 1.	<del>07-27-1994</del>	Rule 285(2) (g), 40 CFR 63: Subpart ZZZZ
EUENGINE3 (4EK468)	Caterpillar 3516 landfill gas-fired reciprocating engine in Plant 1.	07-27-1994	Rule 285(2) (g), 40 CFR 63: Subpart ZZZZ
EUENGINE4 (4EK437)	Caterpillar 3516 landfill gas-fired reciprocating engine in Plant 1.	04-01-2000	Rule 285(2) (g), 40 CFR 63: Subpart ZZZZ
EUENGINECITB(16) (REMOVED)	<del>Caterpillar 3516 landfill gas-fired reciprocating engine on a flatbed skid beside Plant 1.</del>	<del>08-04-2010</del>	<del>Rule 285(2) (g), 40 CFR 63: Subpart ZZZZ</del>
EUENGINE5 (3RC273) Replaced the CITB(16) and subject to the same requirements	Caterpillar 3516 landfill gas-fired reciprocating engine in Plant 1. (9.5 MMBtu per hour, 0.8 MW each, manf. Date- 1995)	01-31-2017	Rule 285(2) (g), 40 CFR 63: Subpart ZZZZ  (Rule 215(3) – Off-Permit Change)

\* Swapped since the last inspection.

### Michigan Air Emissions Reporting System (MAERS):

The facility reports to MAERS as a Major, Category B fee subject.

### Inspection:

On June 22nd, I conducted an on-site inspection of the Citizens Disposal landfill and the EDGB gas-to-electric plant.

### Section 1 - Citizens Disposal, Inc

Arrived: 9:05 AM

Departed: 10:55 PM

Weather: 79°F, wind SW @ 10 MPH, UV Index 2 Low

No visible emissions (VEs) were observed from any of the facility operations. No landfill odors were identified surrounding the facility outside the fence line. Also, it has been a number of years since this facility has had an odor complaint.

Estimates are that the landfill has about a 14-yr of life left with the currently permitted capacity. There is one cell left to build. There is property for a potential expansion which would increase the operating life but would require permitting from the Materials Management Division.

A drive around the operations of the landfill including the working face was done with Robb Moore. We drove by the inactive (closed) landfill owned by WM, the perimeter of the Citizens Disposal landfill, and the Grof Flare and Zink Flare which were not operating. While driving around the circumference of the landfill, risers for the leachate collection system and the electric powered leachate pumps were noted. Robb pointed out where the gas header had been upgraded to a 12-inch line. 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 or alternate daily cover. The approved alternate daily cover is contaminated soil from GM or materials dredged from the Flint River. Approximately 200 to 300 trash trucks per day make their way to the working face of the landfill and the scales close at 4:00 PM. A lot of construction debris is taken in by the landfill operator. The landfill is producing about 2600 to 2700 cfm of gas currently.

A program to monitor monthly cover integrity and implement cover repairs is required in EULANDFILL, Special Condition (SC) VI.1 now required by 40 CFR 63.1960(c)(5) (FGLANDFILL-AAAA template SC VI.2) and is in place. A copy of the NSPS Monthly Cover Integrity Inspection Surface, Monitoring Design Plan for January through May 2022 was obtained. It showed mainly no issues found with the exception of an animal burrow hole by Gas Well 161. Corrective action will be taken.

Surface CH<sub>4</sub> concentration scans of the landfill are done quarterly as required by 40 CFR 63.1958(d)(1) (FGLANDFILL-AAAA template SCs I.1, V.1, and VI.1). The emission limit for CH<sub>4</sub> is less than 500 parts per million (ppm) above background level. An exceedance of limit could indicate the need to draw additional gas from the area for better capture and to prevent gas migration off-site. The company that is contracted to do the surface monitoring, well field monitoring, and flare operation and maintenance (O & M) is Monitoring Control and Compliance (MCC). MCC has been the O & M provider since February of 2019. The 2nd quarter 2022 scan was completed on June 15<sup>th</sup> and 16<sup>th</sup>. There were 3 exceedances above 500 ppm, all penetrations, that were identified according to Robb. The 10-day rescan had not occurred yet. Records are kept as required by 40 CFR 63.1960(c), (FGLANDFILL-AAAA template, SC VI.1) of the surface CH<sub>4</sub> monitoring.

MCC staff monitor each gas collection wellhead for temperature and pressure (and oxygen) monthly as required by 40 CFR 63.1958(b) and (c) (FGACTIVECOLL-AAAA template SCs III.2 & 3 and VI.1 & 2). The MACT requires that wellheads on collection systems operate at below required temperatures and negative pressure. An exceedance of parameters 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. A root cause analysis and corrective action analysis is completed to correct an exceedance that took longer than 15-days to correct but no more than 60 days. If the exceedance goes beyond 60 days, then the analysis is to be submitted to AQD. Wellfield Monitoring Data from Jun 2021 through May 2022 was obtained, and the information matches up with the analysis completed.

During the inspection, MCC staff were tuning wells. I observed the tuning of CW104. First temperature, pressure, gas flow, and gas quality (methane (46.9%), carbon dioxide (38.6%), and oxygen (0.0%)) are measured and based on the measurements adjustments are made. For example, if the methane content of the gas is low then the technician will reduce flow in the well to allow the methane content to increase.

A plot plan of the collection system (as required by 40 CFR 63.1983(d) listed in FGACTIVECOLL-AAAA template, SC VI.10) was obtained (Gas System As-Built Drawing as of June 2022). On the drive around the landfill, the two (2) wells that had an exceedance of parameters as noted on the plot plan were viewed. The wells are summarized below:

1. CITCW163 – Positive pressure on June 30, 2021. Blockage of lateral was determined, and replacement of the vacuum lateral was completed. Remediated within 60 days of initial exceedance as demonstrated by July 28, 2021 based on the Wellfield Monitoring Data.
2. CITCW164 – Positive pressure on June 30, 2021. Blockage of lateral was determined, and replacement of the vacuum lateral was completed. Remediated within 60 days of initial exceedance. Compliance was demonstrated by August 4, 2021 based on the Wellfield Monitoring Data

**EUGROFFLARE (non-assisted open flare) handles excess gas from the landfill that the gas-to-energy plants cannot take. The flare is designed to meet the performance requirements of 40 CFR 60.18. The landfill is producing enough gas to be at the capacity of the gas-to-electric plant and a couple hundred scfm of gas has to go to the flare when an engine is off-line for maintenance. EDGB operates the Grof flare and directs partially treated gas to it as needed when an engine is down for maintenance. The Grof flare has nitrogen tanks beside it which is the gas used to ignite the pilot light on the flare. The initial test for the flare and the last time it was tested was on January 14, 2003. Testing was completed for gas exit velocity, net heating value, and visible emissions (0% opacity observed).**

**EUZINKFLARE (non-assisted open flare) is for backup if the gas-to-energy plants are down. The main gas header from the landfill has a "T" in it. If the flare is on, the gas is pulled towards the flare. If the gas-to-energy plants are operating, the gas is pulled toward the plants. The flare is designed to meet the performance requirements of 40 CFR 60.18. It is equipped with a thermocouple to monitor for the presence of a flame, and an automatic shutdown routine that activates if the presence of a flame cannot be verified. The Zink flare is sized to handle the entire amount of gas that the landfill produces in the event the gas-to-energy plants are not operational for a period of time. It is run once a month to check operation at a minimum and no operational issues have recently been identified. It is scheduled for some maintenance (ball bearing replacement). The initial test for the flare and the last time it was tested was on May 19, 2009. Testing was completed for gas exit velocity, net heating value, and visible emissions (<39 seconds of visible emissions were observed). The testing results demonstrated compliance with 40 CFR 60.18.**

**A test protocol was received on 10/2/2018 for field NMOC testing of the nonproductive areas of the landfill in order to cease operation of the gas collection equipment and remove the GCCS from service for the WM side of the landfill. Tier 2 sampling was completed on 11/1/2018. The area was found to be at about 7% production. Areas to be excluded from collection and control need to contribute less than 1% of the total amount of NMOC emissions from the total landfill. The area tested did not have gas production low enough to request closure and removal of the GCCS. No nonproductive area testing has been conducted since 10/2/2018.**

**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. Five (5) random manifests dated 1/13/2022, 3/28/2022, 4/8/2022, 4/13/2022, and 5/13/2022 were obtained and sent to Craig Dechy (EGLE-AQD, TPU).**

The notification of excavation/disturbance as required by EUASBESTOS, SC VII.6 is submitted for the year. The notice for the 2022 year was submitted to LARA on January 18, 2022. This notice does need to be provided to AQD per EUASBESTOS, SC VII.6. Quarterly, the locations of asbestos material is plotted on a map to show where it is located in the landfill. Copies of the 3<sup>rd</sup> quarter 2021, 4<sup>th</sup> quarter 2021, and 1<sup>st</sup> quarter 2022 asbestos locations maps were obtained along with the "Detail Material Activity Report' for 1<sup>st</sup> quarter 2022 for friable asbestos. The waste shipment records, the diagrams of the asbestos disposal areas with location (GPS), depth and quantities are required by EUASBESTOS, SC VI.1 to 3. Around the landfill, signs are posted warning that asbestos has been disposed of in the landfill which are required by EUASBESTOS, SC III.1.

There is a parts washer located in the shop. It is included as FGCOLDCLEANER in the ROP. There have been no changes to the parts washer. The parts washer was closed when viewed on the last inspection. Safety-Kleen services the parts washer. Just about every 18-months the fluid is replaced. The Safety Date Sheet (obtained previously) for the solvent used showed the material is a petroleum distillate. The parts washer meets the requirements of Rule 281(2)(h).

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(2)(i).

There is a flexible group for Rule 290 subject emission units called FGRULE290. There are no emission units at the facility that are operating under Rule 290 and conditions will need to be removed with the next ROP renewal.

## Section 2 – EDGB

Arrived: 11:00 AM

Departed: 1:10 PM

Weather: 83°F, wind SW @ 10 MPH, UV Index 5 moderate

No visible emissions (VEs) were observed from any of the facility exhaust stacks upon arrival. No odors were identified surrounding the facility. All engines were operating in the two plants at the time of the inspection with the exception of EUENGINE6 which was coming back on-line after maintenance. EUGROFFLARE was operating with a target of 525 SCFM of landfill gas being directed to it.

The basic business agreement between the landfill and the gas plant is that Republic gets a percentage of the profit from the gas plant. The gas wells produce ~100 scfm to a low of 5-10 scfm each. The gas is drawn to the engine plants using compressors.

All seven (7) engines run all the time plus excess gas is directed to the EUGROFFLARE when an engine is down for maintenance.

In the EDGB operated gas-to-electric plants, I meet with Tony Saintmarie and Darrel Hiltz, both EDGB operations technicians for the plant. One person is on-call 7 days per week and this switches from week to week.

Plant 1 has five (5) CAT 3516 engines numbered EUENGINE1 through EUENGINE5. (EUENGINE5 will be added to the ROP with renewal.) All were considered exempt per Rule 285(2)(g) but will be permitted as part of the action to resolve a violation due to the increase in the sulfur content of the landfill gas. 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 if applicable.

EUENGINE6 and EUENGINE7 are tested annually in order to demonstrate compliance with the emission limits for NOx, CO, and VOC per the requirements for 40 CFR 60, Subpart JJJJ and the ROP. Compliance with the emission limits for NOx, CO, and VOC (SCs 1.1, 2, and 4) per the requirements for 40 CFR 60, Subpart JJJJ has been demonstrated annually.

EUENGINE6 and EUENGINE7 are currently exceeding the emission limit for SOx due to an increase in the sulfur (mainly hydrogen sulfide (H<sub>2</sub>S)) content of the landfill gas which fuels the engines. The exceedance has been traced back to landfill gas sampling done in May of 2016, but discovered when testing for compliance with the emission limit for SOx was requested by AQD staff in October/November 2017. The testing of SOx did not occur during the November 2017 engine testing as it was identified via Drager tube sampling that the sulfur content had significantly increased and the emission limits had been exceeded. In December 2017, Energy Developments (EDL) staff had indicated that they were working on a PTI modification to address the issue. The application was not submitted before the next stack testing was required and performed. SOx was actually stacked tested in November 2018 from EUENGINE6 and EUENGINE7, and was found to be exceeding the emission limits for SOx.

Weekly sampling of the sulfur content of the landfill gas is ongoing, and the results are being provided to the landfill operator and AQD. Sampling using Drager tubes is estimating between 800 ppm to 1000 ppm H<sub>2</sub>S content in the gas. Testing of total sulfur (TRS) was requested with the last engine stack testing event, but was timed with semi-annual gas sampling. The last lab analysis results for the date 10/26/2021 showed H<sub>2</sub>S at 1100 ppm and TRS at 1124 ppm.

A current list of the engines and serial numbers at the facility was provided. Granger had maintained a fleet of engines for “like-kind” engine replacement for engine swapping, and EDL (the parent company of EDGB) has acquired all the assets. For “like-kind” engine replacement, all supporting documentation for this type of action should be maintained per the requirements in the PM/MAP for FGENGINES (SC III.2, SC VI.4), FG3615ENGINES (SC III.2, SC VI.2), and FGRICEMACT (SC III.4, SC VI.3). Engines are swapped out according to a PM guideline based on performance, engine operating hours, etc. and is dictated by the central office.

It appears one (1) “like-kind” engine replacement has been performed for EUENGINE2 since the last inspection in November 2019. Requested documentation for the like-kind replacements was received and is attached to the file. The Part 18 rules define the criteria for determining a like-kind replacement. The emission unit has to maintain the definition of existing and not reconstructed per Rule 1801(r)(ii), and that the replacement is not a major modification and meets the requirements of routine maintenance, repair, and replacement (RMRR) per Rule 1801(aa).

**Rule 1801(r)(ii)** An existing emissions unit is any emissions unit that does not meet the definition of a new emissions unit. A replacement unit is an existing emissions unit and no creditable emission reductions shall be generated from shutting down the existing emissions unit that is replaced. A replacement unit shall meet all of the following criteria:

(A) The emissions unit is a reconstructed unit if the replacement of components of an existing facility is to such an extent that the fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility or the emissions unit completely takes the place of an existing emissions unit.

(B) The emissions unit is identical to or functionally equivalent to the replaced emissions unit.

(C) The replacement does not alter the basic design parameters of the process unit.

**Rule 1801(aa)** “Major modification” means any of the following:

(i) Physical change in or change in the method of operation of a major stationary source that would result in both of the following:

**(A) A significant emissions increase of a regulated new source review pollutant.**

**(B) A significant net emissions increase of that pollutant from the major stationary source.**

**(ii) A significant emissions increase from any emissions units or net emissions increase at a major stationary source that is significant for volatile organic compounds or oxides of nitrogen shall be considered significant for ozone.**

**(iii) Physical change or change in the method of operation shall not include any of the following:**

**(A) Routine maintenance, repair, and replacement.**

.....

**(F) An increase in the hours of operation or in the production rate, unless the change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975, under PSD regulations or R 336.1201(1)(a).**

**EUENGINE2 - This engine was swapped out for a major overhaul in December 2021. In the "Plant Maintenance Logs" on December 6, 2021, it is noted that EUENGINE2 was shutdown with 52727 equipment hours on the clock for a MJO (major overhaul). The engine (4EK00124) was swapped for the engine (4EK00464) on December 8, 2021. The engine removed from the site was a Caterpillar Model 3516 manufactured December 10, 1993. The replacement engine was an identical Caterpillar Model 3516 engine manufactured March 21, 1995. (The gas engine technical data sheet provided was for a Caterpillar® G3516 LE and dated 25-Jul-04.) The replacement engine is subject to the same requirements as the old under 40 CFR 63, Subpart ZZZZ and was claimed not to be reconstructed. In order to be considered reconstructed, the fixed capital cost of the new components needs to exceed 50% of the fixed capital cost to construct a new source (in this case the engine). According to the documentation provided, "the replacement engine has not been reconstructed as a result of the maintenance / refurbishing activities since the fixed capital cost of the new components for the replacement engine is than 30% of the fixed capital cost that would be required to purchase a comparable entirely new CAT® G3516 engine." No details were provided on the cost of the maintenance / refurbishing activities nor the cost of a comparable new CAT® G3516 engine. It just doesn't exceed 50% of the fixed capital cost of a new engine according to EDL.**

**Only one engine was swapped out in a 2-year period. The actual-to-projected-actual test could be considered for applicability (Rule 1802(4)(c)), because the engine is supposed to be "like-kind" and is to be operated in the same manner as the engine replaced. Since the potential emissions from the Caterpillar Model 3516 are below significant for any criteria pollutant, an emissions increase above significant is not expected.**

A Safety and Compliance Manual has been put together for the plants. It includes a copy of the ROP, and older plans such as the Startup, Shutdown, and Maintenance Plan (SSM) for EUTREATMENTSYS as required by SC XI.2 dated October, and the Preventative Maintenance / Malfunction Abatement Plan (PM/MAP) dated October 2018. The PM/MAP does need to be updated to include the engines numbered EUENGINE1 through EUENGINE5 but currently references the engines listed in ROP No. MI-ROP-N5991-2016. Some responsible personnel updates may also be needed. They have added Work Practice Plan Standard Operating Procedures, Continuous Monitoring System Quality Control Program, and Treatment System Monitoring Plan (site-specific treatment system monitoring plan per 40 CFR 63.1983 (b)(5)(ii)) required by 40 CFR 63, Subpart AAAA.

An electronic preventative maintenance (PM) program is in place. Work orders for the equipment are generated by the system. A copy of plant maintenance logs and downtime for January 2021 through May 2022 were supplied. The logs include the date, time, event description or reason, equipment number, equipment operating time in hours, and length of event. Events logged included electrical and mechanical work, plugs, oil and filter changes; generator replacement, belt replacements; majors, and cleaning and washing. In other words, routine maintenance and repairs were documented properly in compliance with EUTREATMENTSYS (SC VI.2) and 40 CFR 63.1961(h), FG3615ENGINES (SC VI.2), FGENGINE (SC VI.4), and FGRICEMACT (SC VI.3).

A snapshot of the PLC computer screen with the engine operations on the day of the inspection was obtained. All operating data is sent electronically to “headquarters” and AQS (consultant). The operating data includes kilowatt-hours (kW-hr), pressure, landfill gas flow to each plant, and production data. Daily Logs are kept of the data for equipment in Plants 1 and 2, and maintained on-site. Information logged daily is compiled into a week log. Weekly plant logs from January to the first week of June 2022 were obtained. Compliance with a number of monitoring and recordkeeping conditions per 40 CFR 63, Subpart AAAA requirements, FG3615ENGINES, FGENGINE, and FGRICEMACT was demonstrated.

The following data from the digital display in the control room first Plant #1 and then Plant #2 (when EUENGINE6 was coming back on-line) were recorded during the time of inspection:

EUENGINE1 = 772 to 696 kW  
EUENGINE2 = 779 to 701 kW  
EUENGINE3 = 748 to 698 kW  
EUENGINE4 = 750 to 698 kW  
EUENGINE5 = 765 to 767 kW  
EUENGINE6 = 0 to 1583 kW  
EUENGINE7 = 1615 to 1597 kW

**EUGROFFLARE = 504 to 117 SCFM**

**Methane content of the gas was 48.5% and oxygen content was 0.70% according to the QuickPanel View in Plant 1.**

**Records Review:**

**The following records were requested and obtained for the inspection (Section 1):**

- 1. The Wellfield Monitoring Data Jun-2021 through May-2022.**
- 2. CDI Overall Gas As-Built-2022**
- 3. 2022 Soil Cover Integrity Report**
- 4. EUGROFFLARE and EUZINKFLARE stack testing reports**
- 5. Root Cause Analysis for CW163 and 164.**
- 6. 3Q2021-1Q22 Asbestos location maps, 2022 Asbestos Notification, 5 Asbestos manifests**
- 7. Gas flow records and flare operation for EUGROFFLARE for June 2021 to May 2022 including Methane (%), landfill vacuum, and flare temperature.**
- 8. The 12-month rolling gas flow, heat input (MMBtu), and CO and SOx emissions data for EUZINKFLARE from June 2021 to May 2022.**

**For EUZINKFLARE, the 12-month rolling landfill gas usage in May 2022 was 28.77 MMcf and the permit limit is 1,570 MMcf per 12-month rolling time period. CO emissions based on a 12-month rolling time period in May 2022 were 2.63 tpy, and SOx emissions based on a 12-month rolling time period in May 2022 were 1.44 tpy. The CO emission limit is 146 tpy and SOx emission limit is 48 tpy. EUZINKFLARE is operated below permit limits in SCs I.1 and 2.**

**The following records were requested and obtained for the inspection (Section 2):**

- 1. January 2021 through May 2022 Downtime logs**
- 2. Weekly plant logs from January to the first week of June 2022**
- 3. An Excel spreadsheet of sulfur sampling results 2019 through Jun 2022**
- 4. A list of engine serial numbers**
- 5. EDGB Work Practice Plan Standard Operating Procedures, Continuous Monitoring System Quality Control Program, and Treatment System Monitoring Plan required by 40 CFR 63, Subpart AAAA.**
- 6. Supporting documentation for a “like-kind” engine replacement of EUENGINE2.**
- 7. The landfill gas usage and kilowatt output for the last 12-months from January 2021 to May 2022 for EUENGINE6 and EUENGINE7 (FGENGINES).**

For FGENGINES, the 12-month rolling kW-hr output in May 2022 for EUENGINE6 was 12.8 MM kW-hr and for EUENGINE7 was 12.7 MM kW-hr. The output limit is 14 MM kW-hr/12-month rolling per engine in accordance with SC II.1. EUENGINE6 and EUENGINE7 are operating in compliance with SC II.1

All records obtained in the course of this compliance inspection are attached to the file copy of the report and/or saved electronically at S:\Air Quality Division\@District Facilities\N5991\Records\June 2022 Inspection.

Annual and semi-annual certifications and deviation reports are being received. Deviations have been reported since the last inspection for small periods when not continuously monitoring and recording landfill gas flow to flares or engines due to malfunction or maintenance, etc. The non-compliance with the SO<sub>x</sub> emission limits for the engines is an on-going deviation (violation).

**Status of violation for the increase in total sulfur in the landfill gas:**

On May 14, 2018, EDGB met with AQD enforcement and Lansing District staff regarding how to resolve the violation and to discuss a future consent order. Attempts have been made to submit an administratively and/or technically complete PTI application to resolve the violation. The last PTI application from EDGB was withdrawn on October 2, 2019.

On December 17, 2019, AQD sent a second notice of ongoing violations to EDGB. The sulfur concentration (based on weekly sampling) in the landfill gas indicates that the violations for EUENGINE1-7 at EDGB identified below remain ongoing.

EUENGINE1 – 5, Caterpillar 3516 landfill gas-fired RICE located in Plant 1: The information provided with the 2017 MAERS report demonstrate that actual emissions of SO<sub>2</sub> from the engines have increased. This violation was originally communicated to EDGB on March 4, 2019.

EUENGINE6 and EUENGINE7, two (2) Caterpillar G3520 landfill gas-fired RICE located in Plant 2: Sampling results and stack testing indicate emissions in excess of the emission limit for each engine. These violations were originally identified in letters dated March 28, 2018, and January 17, 2019.

Since the increase in total sulfur in the landfill gas is considered a change in the method of operation, this effects all equipment at the facility that burns landfill

gas. The program for compliance includes a completed PTI application for the two (2) Caterpillar G3520 engines and the five (5) Caterpillar 3516 engines. Also, potential emissions of SO<sub>2</sub> from the project could be greater than 40 tons per year which exceeds the significant threshold and may trigger New Source Review (NSR) for a major modification.

A violation for EUGROFFLARE, and EUZINKFLARE was sent to Citizens Disposal on February 13, 2019 due to the increase in the sulfur content of the landfill gas. The PTI application to resolve the violation will be coordinated with EDGB since the first attempt at a complete PTI application was voided on October 11, 2019.

A meeting with Citizens Disposal, EDGB, and AQD staff was held on October 10, 2019 to discuss recent permitting actions, issues, and options going forward. Negotiations with EDGB as still on going with work continuing on submittal of one or more PTI applications to resolve on-going non-compliance. The last contact with representatives for EDGB was on April 21, 2022.

**Summary:**

No instances of non-compliance with the conditions of ROP No. MI-ROP-N5991-2016 and 40 CFR 63, Subpart AAAA were identified with the exception of the increase in total sulfur content of the gas causing non-compliance with the SO<sub>x</sub> emission limits for FGENGINES, and Rule 201 violations for EUENGINE1 through EUENGINE7, EUGROFFLARE, and EUZINKFLARE. EDGB is in escalated enforcement in order to resolve the violations.



**Image 1(0327) :** Tuning of CW104



**Image 2(0330) :** CW163



**Image 3(0331)** : CW164

NAME Julie L. Brunner

DATE 7/6/2022

SUPERVISOR *BM*