

State Registration Number  
M4469

**RENEWABLE OPERATING PERMIT  
STAFF REPORT**

ROP Number  
MI-ROP-M4469-2023

**Riverview Energy Systems, LLC and Riverview Land Preserve**

State Registration Number (SRN): M4469

LOCATED AT

20000 Grange Road and 20863 Grange Road, Riverview, Wayne County, Michigan 48193

State Registration Number (SRN): M4469

Permit Number: MI-ROP-M4469-2023

Staff Report Date: May 29, 2023

This Staff Report is published in accordance with Sections 5506 and 5511 of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Specifically, Rule 214(1) of the administrative rules promulgated under Act 451, requires that the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Air Quality Division (AQD), prepare a report that sets forth the factual basis for the terms and conditions of the Renewable Operating Permit (ROP).

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State Registration Number

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**RENEWABLE OPERATING PERMIT**

**MAY 29, 2023 - STAFF REPORT**

ROP Number

MI-ROP-M4469-2023

**Purpose**

Major stationary sources of air pollutants, and some non-major sources, are required to obtain and operate in compliance with an ROP pursuant to Title V of the federal Clean Air Act; and Michigan’s Administrative Rules for Air Pollution Control promulgated under Section 5506(1) of Act 451. Sources subject to the ROP program are defined by criteria in Rule 211(1). The ROP is intended to simplify and clarify a stationary source’s applicable requirements and compliance with them by consolidating all state and federal air quality requirements into one document.

This Staff Report, as required by Rule 214(1), sets forth the applicable requirements and factual basis for the draft ROP terms and conditions including citations of the underlying applicable requirements, an explanation of any equivalent requirements included in the draft ROP pursuant to Rule 212(5), and any determination made pursuant to Rule 213(6)(a)(ii) regarding requirements that are not applicable to the stationary source.

**General Information**

Stationary Source Mailing Address Section 1:	Riverview Energy Systems 20000 Grange Road Riverview, Michigan 48193
Stationary Source Mailing Address Section 2:	Riverview Land Preserve 20863 Grange Road Riverview, Michigan 48193
Source Registration Number (SRN):	M4469
North American Industry Classification System (NAICS) Code:	562212 – Solid Waste Landfill
Number of Stationary Source Sections:	2
Is Application for a Renewal or Initial Issuance?	Renewal
Application Number:	201900109
Responsible Official - Section 1:	Kevin Dobson, Vice President – Biomass Energy 734-358-1408
Responsible Official - Section 2:	Kevin Sisk, Director of Solid Waste 734-309-2233
AQD Contact - District Inspector:	Jon Lamb, Senior Environmental Quality Analyst 313-348-2527
AQD Contact - ROP Writer:	Matt Karl, Senior Environmental Quality Analyst 517-282-2126
Date Application Received:	June 20, 2019
Date Application Was Administratively Complete:	June 24, 2019
Is Application Shield in Effect?	Yes
Date Public Comment Begins:	May 29, 2023
Deadline for Public Comment:	June 28, 2023

## **Source Description**

This ROP consists of two parts: section 1 covers operations at Riverview Energy Systems (RES) and section 2 covers operations at Riverview Land Preserve (RLP). RES and RLP are located at 20000 and 20863 Grange Road, Riverview between King Road, and Sibley Road. The source is located within a mostly residential area of Riverview, bordering the cities of Trenton, Brownstown, and Woodhaven. The nearest residential area is about 400 feet west of the RLP property line and about 800 feet west of the RES property line. Adjacent to the east is the Riverview municipal golf course, which operates a driving range and practice course that is located on a closed portion of the landfill on the north side.

### **Section 2: RLP**

RLP is classified as a Municipal Solid Waste (MSW) landfill or Type II landfill. In Michigan, the Materials Management Division (MMD) establishes standards for Solid Waste Management. Rule 299.4104(d) defines a MSW or Type II landfill as:

“A landfill which receives household waste or municipal solid waste incinerator ash, and which is not a land application unit, surface impoundment, injection well, or waste pile. A municipal solid waste landfill may also receive other types of solid waste, such as any of the following: construction and demolition waste, sewage sludge, commercial waste, nonhazardous sludge, hazardous waste from conditionally exempt small quantity generators, industrial waste. Such a landfill may be publicly or privately owned.”

RLP is owned and operated by the City of Riverview and accepts solid waste such as municipal household waste, construction, and demolition debris, and industrial waste. The facility receives no asbestos, hazardous waste, or sewage sludge. The landfill started accepting waste in December 1968 and comprises an area of roughly 300 acres with a design capacity of 39.26 million tons (35.38 million megagrams (Mg)). Current estimates show that the landfill is expected to reach capacity around 2031.

The landfill accepts waste from 6:30 AM to 4:30 PM, Monday through Friday, and 7:00 AM to 11:30 AM on Saturdays. The solid waste is transported to the facility in a variety of vehicles that potentially generate fugitive dust particulate matter (PM) from paved and unpaved roadways.

After waste is transported to the landfill it is placed in one of the active working areas, known as cells, and is covered daily with soil (and clay) or other materials (shredded tires, foam). When a cell reaches design capacity, a liner is installed to cover the waste. Over time, natural biological processes transform the waste materials and produce leachate and landfill gas (LFG). Initially, decomposition is aerobic until the oxygen supply is exhausted. Anaerobic decomposition of the buried waste creates landfill gas (LFG). LFG consists mainly of methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), and hydrogen sulfide (H<sub>2</sub>S), volatile organic compounds (VOCs) and non-methane organic compounds (NMOC). NMOC is the primary regulated air pollutant associated with LFG generation. The landfill has been evaluated to have greater than 50 Mg per year nonmethane organic compound (NMOC) emissions.

LFG is collected at the landfill by a gas collection and control system (GCCS). This GCCS consists of a series of interconnected vertical wells, horizontal collectors, surface collectors and other gas extraction devices operating under negative pressure vacuum created using a gas blower system to collect LFG throughout the landfill and move the gas to further treatment systems or pollution control devices.

RLP operates a BioGas System (EUBIOGASTREATSYS). The BioGas System treats a portion of the LFG which is used to fuel vehicles both on site and for the City of Wyandotte. The BioGas System process runs the LFG through an adsorbent media to remove H<sub>2</sub>S and then through a heating and chilling unit to remove moisture. The LFG is sent through three (3) charcoal filter vessels to remove VOCs and additional H<sub>2</sub>S and then through a particulate filter to remove particulate greater than 3 microns. After this treatment, the gas is approximately 95% CH<sub>4</sub>. The gas is heated and compressed to 4200 psi, at which point it can be dispensed and used as vehicle fuel.

RLP operates two (2) open flare controls: EUOPENFLARE1 and EUOPENFLARE2. The open flares are used to combust the LFG that is more than what the RES turbines can accommodate, or during times when the turbines are down for maintenance. EUOPENFLARE2 has a capacity of 4700 cfm and is the main control device. EUOPENFLARE1 has a capacity of 2131 cfm and is used as the backup control device.

### Section 1: RES

LFG collected by the GCCS which is not used or flared by RLP is sent to RES to be used as fuel for turbines to produce electricity which is sold to the grid. The LFG is fed from a common header to a sulfur control system which removes H<sub>2</sub>S and mercaptans. The sulfur control system consists of four tanks filled with iron oxide media which are under a negative pressure vacuum. The vacuum draws the LFG through the tanks, where the sulfur compounds in the LFG react with the iron oxide media in the tanks to form pyrite (FeS<sub>2</sub>) which further oxidizes to elemental sulfur. This reaction is exothermic, or produces heat, so the tanks are equipped with temperature monitors and alarms; if the temperature reaches 125°F, water is pumped into the tanks from a sump well to reduce the temperature. The differential pressure across the tanks and the outlet H<sub>2</sub>S concentration is monitored to determine when the tank media is spent. The spent media is considered non-hazardous and is disposed of in the landfill. Since the H<sub>2</sub>S adsorbed onto the media is converted to elemental sulfur, the disposed media does not re-introduce H<sub>2</sub>S back into the landfill.

After the sulfur control system, the lower-sulfur LFG is further treated in the treatment system (EUTREATMENTSYS). EUTREATMENTSYS processes the LFG by removing particulates down to 10 microns, compresses the gas, and removes excess moisture. The treatment system achieves this using a scrubber to remove the particulate and condensate, and then uses two parallel compressor skids to compress the gas. Compression heats the gas, so the gas is passed through a heat exchanger to remove excess heat. Excess moisture is removed by a dewatering system. The gas is then pre-heated and sent to the turbines.

The turbines (FGTURBINES) consist of two (2) Solar Centaur 40 units. 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. Approximately 20% of the electricity produced is used to power the compressor skid system in EUTREATMENTSYS while the remainder is sold to the grid.

With Permit to Install (PTI) No. 88-22, RES proposed to construct a biomethane recovery and pipeline quality renewable natural gas facility. The facility will recover (bio)methane from LFG from RLP. The LFG will be processed to meet pipeline quality natural gas specifications and compressed for pipeline transport.

The new recovery process will take gas from EUTREATMENTSYS and then will use a Selexol Pretreatment System to recover (bio)methane. The Selexol Pretreatment Systems uses a mixture of chemicals that at different pressures and temperatures absorb or desorb various components of the LFG. The equipment involved consists of liquid and gas separation vessels, compressors and semi-permeable membranes that are used to separate the desired (bio)methane from the unwanted LFG components, known as tail gases. A 2.63 MMBTU/hr natural gas fired amine reboiler is used to provide heat for the treatment of the natural gas product.

The primary tail gases produced from the facility will be controlled with a thermal oxidizer (TO) as a primary control device while the secondary tail gas from the facility will be controlled with a recuperative thermal oxidizer (RCO). A backup flare will combust off-specification products.

The pipeline quality natural gas product will either be added to a pipeline transmission system or burned as fuel in FGTURBINES.

The following table lists stationary source emission information as reported to the Michigan Air Emissions Reporting System (MAERS) for the year **2021**.

**TOTAL STATIONARY SOURCE EMISSIONS**

Pollutant	Tons per Year
Carbon Monoxide (CO)	82.1
Nitrogen Oxides (NO <sub>x</sub> )	61.9
PM10*	13.5
Sulfur Dioxide (SO <sub>2</sub> )	48.9
Volatile Organic Compounds (VOCs)	3.8

\*Particulate matter (PM) that has an aerodynamic diameter less than equal to a nominal 10 micrometers.

This source is an area source of hazardous air pollutant (HAP) emissions pursuant to Section 112(b) of the federal Clean Air Act. No HAP emissions data is reported.

See Parts C and D in the ROP for summary tables of all processes at the stationary source that are subject to process-specific emission limits or standards.

**Regulatory Analysis**

The following is a general description and history of the source. Any determinations of regulatory non-applicability for this source are explained below in the Non-Applicable Requirement part of the Staff Report and identified in Part E of the ROP.

The stationary source is in Wayne County, which is currently designated by the United States Environmental Protection Agency (USEPA) as a non-attainment area with respect to the 8-hour ozone standard.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70 because the potential to emit of carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) exceeds 100 tons per year.

The stationary source is a “synthetic minor” source regarding HAP emissions because the stationary source accepted legally enforceable permit conditions limiting the potential to emit of any single HAP regulated by Section 112 of the federal Clean Air Act to less than 10 tons per year and the potential to emit of all HAPs combined to less than 25 tons per year.

Emission units at the stationary source have not been subject to the Prevention of Significant Deterioration regulations of Part 18, Prevention of Significant Deterioration of Air Quality of Act 451 or 40 CFR Part 52.21 because at the time of New Source Review (NSR) permitting, the potential to emit of each criteria pollutant was less than 250 tons per year. In 2002, a “synthetic minor” permit limiting the potential to emit of carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) to less than 250 tons per year, Permit to Install (PTI) No. 250-00, was issued for the landfill gas turbines (FGTURBINES).

The stationary source was subject to the Standards of Performance for Municipal Solid Waste Landfills promulgated in 40 CFR Part 60, Subparts A and 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 Part 62, Subpart OOO. Riverview Land Preserve 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 stationary source is subject to the National Emission Standard for Hazardous Air Pollutants for Asbestos promulgated in 40 CFR Part 61, Subparts A and M. The landfill does not accept asbestos waste, although it is permitted to do so. These requirements are contained in EUASBESTOS.

The stationary source is subject to the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as promulgated in 40 CFR Part 63, Subparts A and AAAA. The landfill has estimated NMOC emissions greater than 50 Megagrams per year and is required to install and operate an active landfill gas collection and control system. Beginning no later than September 27, 2021, all landfills described in 40 CFR 63.1935 must meet the requirements of this subpart. A landfill may choose to meet the requirements of this subpart rather than the requirements identified in 40 CFR 63.1930(a) at any time before September 27, 2021. Currently, the requirements for 40 CFR 63.1930(a) are included as applicable in this ROP Renewal. On and after September 28, 2021, the requirements for 40 CFR 63.1930(b) apply and are included as applicable in this ROP Renewal.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the "Procedure for Evaluating Periodic Monitoring Submittals."

No emission units have emission limitations or standards that are subject to the federal Compliance Assurance Monitoring rule pursuant to 40 CFR Part 64. The emission limitation(s) or standard(s) for NMOC at the stationary source with the underlying applicable requirement(s) of 40 CFR Part 62, Subpart OOO and 40 CFR Part 63, Subpart AAAA are exempt from the federal Compliance Assurance Monitoring (CAM) regulation pursuant to 40 CFR 64.2(b)(1)(i) because the emission limitations and standards meets the CAM exemption for regulations proposed after November 15, 1990.

Please refer to Parts B, C and D in the draft ROP for detailed regulatory citations for the stationary source. Part A contains regulatory citations for general conditions.

**Source-Wide Permit to Install (PTI)**

Rule 214a requires the issuance of a Source-Wide PTI within the ROP for conditions established pursuant to Rule 201. All terms and conditions that were initially established in a PTI are identified with a footnote designation in the integrated ROP/PTI document.

The following table lists all individual PTIs that were incorporated into previous ROPs. PTIs issued after the effective date of ROP No. MI-ROP-M4469-2015a are identified in Appendix 6 of the ROP.

PTI Number			
250-00	13-05	77-12	250-00B

**Streamlined/Subsumed Requirements**

This ROP does not include any streamlined/subsumed requirements pursuant to Rules 213(2) and 213(6).

### **Non-applicable Requirements**

Part E of the ROP lists requirements that are not applicable to this source as determined by the AQD, if any were proposed in the ROP Application. These determinations are incorporated into the permit shield provision set forth in Part A (General Conditions 26 through 29) of the ROP pursuant to Rule 213(6)(a)(ii).

### **Processes in Application Not Identified in Draft ROP**

The following table lists processes that were included in the ROP Application as exempt devices under Rule 212(4). These processes are not subject to any process-specific emission limits or standards in any applicable requirement.

<b>PTI Exempt Emission Unit ID</b>	<b>Description of PTI Exempt Emission Unit</b>	<b>Rule 212(4) Citation</b>	<b>PTI Exemption Rule Citation</b>
Gasoline Generator	Two (2) gasoline fired portable generators. One with 3.5 horsepower motor. One with 13 horsepower motor.	R 336.212(4)(e)	R 336.1285(2)(g)
Air Compressors	Two (2) gasoline fired portable air compressors with 9 HP motors.	R 336.212(4)(e)	R 336.1285(2)(g)
Gasoline Generator	Three (3) gasoline fired portable generators with 13 HP motors.	R 336.212(4)(e)	R 336.1285(2)(g)
Generator	Two (2) portable generators with 100 kW output.	R 336.212(4)(e)	R 336.1285(2)(g)
Generator	One (1) Blue Star generator with 275 kW output.	R 336.212(4)(e)	R 336.1285(2)(g)
Light Plants	Three (3) portable light plants with 6 kW output.	R 336.212(4)(e)	R 336.1285(2)(g)

### **Draft ROP Terms/Conditions Not Agreed to by Applicant**

This draft ROP does not contain any terms and/or conditions that the AQD and the applicant did not agree upon pursuant to Rule 214(2).

### **Compliance Status**

The AQD finds that the stationary source is expected to be in compliance with all applicable requirements as of the effective date of this ROP.

### **Action taken by EGLE, AQD**

The AQD proposes to approve this ROP. A final decision on the ROP will not be made until the public and affected states have had an opportunity to comment on the AQD's proposed action and draft permit. In addition, the USEPA is allowed up to 45 days to review the draft ROP and related material. The AQD is not required to accept recommendations that are not based on applicable requirements. The delegated decision maker for the AQD is Brad Myott, Field Operations Supervisor. The final determination for ROP approval/disapproval will be based on the contents of the ROP Application, a judgment that the stationary source will be able to comply with applicable emission limits and other terms and conditions, and resolution of any objections by the USEPA.



State Registration Number  
M4469

**RENEWABLE OPERATING PERMIT**  
**JUNE 29, 2023 - STAFF REPORT ADDENDUM**

ROP Number  
MI-ROP-M4469-2023

**Purpose**

A Staff Report dated May 29, 2023, was developed to set forth the applicable requirements and factual basis for the draft Renewable Operating Permit (ROP) terms and conditions as required by Rule 214(1) of the administrative rules promulgated under Act 451. The purpose of this Staff Report Addendum is to summarize any significant comments received on the draft ROP during the 30-day public comment period as described in Rule 214(3). In addition, this addendum describes any changes to the draft ROP resulting from these pertinent comments.

**General Information**

Responsible Official - Section 1:	Kevin Dobson, Vice President – Biomass Energy 734-358-1408
Responsible Official - Section 2:	Kevin Sisk, Director of Solid Waste 734-309-2233
AQD Contact - District Inspector:	Jon Lamb, Senior Environmental Quality Analyst 313-348-2527
AQD Contact - ROP Writer:	Matt Karl, Senior Environmental Quality Analyst 517-282-2126

**Summary of Pertinent Comments**

FGTOX SC III.2.b “gas glow rate” should be “gas FLOW rate”.

FGTOX SC VI.8 condition refers to emission unit EURECUPTOX when it should refer to EUTO.

**Changes to the May 29, 2023 Draft ROP**

FGTOX SC III.2.b the typo “glow” was corrected to “flow”.

FGTOX SC VI.8 the condition was updated to refer to EUTO as permitted in PTI No. 88-22.