

**MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
AIR QUALITY DIVISION**

September 30, 2021

PERMIT TO INSTALL
177-19A

ISSUED TO
Granger Waste Management Company

LOCATED AT
16980 Wood Road
Lansing, Michigan 48906

IN THE COUNTY OF
Ingham

STATE REGISTRATION NUMBER
N5997

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: August 9, 2021	
DATE PERMIT TO INSTALL APPROVED: September 30, 2021	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department/EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO ₂ e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO _x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal condition or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this Permit to Install.
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUUF1	One landfill gas open utility flare with a rated design capacity of 4,000 standard cubic feet per minute (scfm), used to control excess landfill gas. The flare may utilize a desulfurization system to remove sulfur in the gas stream before flaring.	To be determined	FGNEWFLARES
EUUF2	One landfill gas open utility flare with a rated design capacity of 2,000 scfm, used to control excess landfill gas. The flare may utilize a desulfurization system to remove sulfur in the gas stream before flaring.	To be determined	FGNEWFLARES

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

FLEXIBLE GROUP SPECIAL CONDITIONS

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGNEWFLARES	Two open utility flares that will burn landfill gas when the Renewable Gas Plant is inoperable or running at a lower capacity. Together the two flares have a maximum capacity of 6,000 scfm.	EUUF1, EUUF2

**FGNEWFLARES
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Two open utility flares (EUUF1, EUUF2) that burn landfill gas when the Renewable Gas Plant is inoperable or running at a lower capacity. Processed landfill gas that is not pipeline quality will be burned in FGNEWFLARES. Together the two flares have a maximum capacity of 6,000 cubic feet per minute.

Emission Unit: EUUF1, EUUF2

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Visible Emissions	0 percent Opacity (Limit applies to each emission unit)	Hourly	EUUF1, EUUF2	SC V.2, SC VI.3	R 336.1301, 40 CFR 60.18(c)(1)
2. NO _x	0.068 lb/MMBTU* (Limit applies to each emission unit)	Hourly	EUUF1, EUUF2	SC V.1, SC VI.2, SC VI.5	R 336.1205(1)(a) & (3), R 336.2803, R 336.2804
3. NO _x	60.0 tpy* (Limit applies to both emission units as a total)	12-month rolling time period as determined at the end of each calendar month	EUUF1 and EUUF2	SC VI.9, SC VI.10	R 336.1205(1)(a) & (3)
4. CO	0.37 lb/MMBTU* (Limit applies to each emission unit)	Hourly	EUUF1, EUUF2	SC V.1, SC VI.2, SC VI.5	R 336.1205(1)(a) & (3), R 336.2804
5. CO	325.0 tpy* (Limit applies to both emission units as a total)	12-month rolling time period as determined at the end of each calendar month	EUUF1 and EUUF2	SC VI.9, SC VI.10	R 336.1205(1)(a) & (3)
6. SO ₂	40.2 pph	Hourly	EUUF1 and EUUF2	SC V.3, SC VI.2, SC VI.5, SC VI.7, SC VI.8	R 336.1205(1)(a) & (3), R 336.2803, R 336.2804

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
7. SO ₂	59.1 tpy (Limit applies to both emission units as a total)	12-month rolling time period as determined at the end of each calendar month	EUUF1 and EUUF2	SC V.3, SC VI.8, SC VI.10	R 336.1205(1)(a) & (3)
* Limits are based on a Higher Heating Value of landfill gas equal to 557 BTU/scf.					

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Net heating value of landfill gas	≥ 200 BTU/scf for non-assisted flares	Hourly	EUUF1 and EUUF2	SC V.1	40 CFR 60.18(c)(1)

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate either flare unless the PM / MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum, the plan shall include:
 - a) Identification of the equipment and, if applicable, air-cleaning device, and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair.
 - b) Description of the items or conditions to be inspected and frequency of the inspections or repairs.
 - c) Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures.
 - d) Identification of the major replacement parts that shall be maintained in inventory for quick replacement.
 - e) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the PM / MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the PM / MAP within 45 days after such an event occurs. The permittee shall also amend the PM / MAP within 45 days, if new equipment is installed or upon request from the AQD District Supervisor. The permittee shall submit the PM / MAP and any amendments to the PM / MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the PM / MAP or amended PM / MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**

2. The permittee shall operate the landfill gas collection system such that all collected gases are vented to a control system designed and operated in compliance with 40 CFR 60.752(b)(2)(iii). In event the collection or control system is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within one hour. **(40 CFR 60.752(b)(2)(ii), 40 CFR 60.753(e), 40 CFR 63.1955(a))**
3. The permittee shall operate EUUF1 or EUUF2 at all times when the collected gas is routed to it, in accordance with 40 CFR 60.18. **(40 CFR 60.752(b)(2)(iii)(A), 40 CFR 60.753(f), 40 CFR 63.1955(a))**

4. The permittee shall operate EUUF1 and EUUF2 with a flame present at all times, as determined by the methods specified in 40 CFR 60.18(f). **(40 CFR 60.18(c)(2))**
5. Non-assisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in 40 CFR 60.18(f)(4), less than 18.3 m/sec (60 ft/sec), except as provided in 40 CFR 60.18(c)(4)(ii) and (iii). **(40 CFR 60.18(c)(4)(i))**
 - a) Non-assisted flares designed for and operated with an exit velocity, equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 BTU/scf). **(40 CFR 60.18(c)(4)(ii))**
 - b) Non-assisted flares designed for and operated with an exit velocity, as determined by the methods specified in 40 CFR 60.18(f)(4) less than the velocity, V_{max} , as determined by the method specified in 40 CFR 60.18(f)(5), and less than 122 m/sec (400 ft/sec) are allowed. **(40 CFR 60.18(c)(4)(iii))**
6. The permittee shall install, calibrate, maintain, and operate, according to the manufacturer's specifications, a heat sensing device for EUUF1 and EUUF2, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame for EUUF1 and EUUF2. **(40 CFR 60.756(c)(1), 40 CFR 63.1955(a))**
3. The permittee shall install, calibrate, maintain, and operate according to the manufacturer's specifications, a landfill gas flow rate measuring device for EUUF1 and EUUF2 to record the flow to or bypass of the flare at least every 15 minutes. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702, 40 CFR 60.756(c)(2))**
8. The provisions of NSPS WWW apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed 1 hour for FGNEWFLARES. **(40 CFR 60.755(e), 30 CFR 63.1955(a))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The nameplate capacity of EUUF1 and EUUF2 shall not exceed 4,000 scfm and 2,000 scfm, respectively, as specified by the equipment manufacturer. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702, R 336.2802(4))**
2. The heat input capacity of EUUF1 and EUUF2 shall not exceed a maximum of 134.4 MMBTU per hour or 66.9 MMBTU per hour, respectively. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702(a), R 336.2803, R 336.2804)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Within 60 days after achieving maximum production rate, but not later than 180 days after commencement of initial startup, the permittee shall verify the net heating value of the combusted landfill gas from EUUF1 and EUUF2, as determined in 40 CFR 60.18(f)(3), and calculated from the concentration of methane in the landfill gas as measured by Method 3C. A minimum of three 30-minute Method 3C samples are determined. The measurement of other organic components, hydrogen, and carbon monoxide is not applicable. Method 3C may be used to determine the landfill gas molecular weight for calculating the flare gas exit velocity under 40 CFR 60.18(f)(4). **(40 CFR 60.752(b)(2)(iii)(A), 40 CFR 60.754(e))**
2. Within 60 days after achieving maximum production rate, but not later than 180 days after commencement of initial startup, the permittee shall evaluate visible emissions from EUUF1 and EUUF2, as required by federal Standards of Performance for New Stationary Sources, at owner's expense, in accordance 40 CFR Part 60, Subparts A and WWW. Visible emission observation procedures must have prior approval by the AQD. Verification of visible emissions includes the submittal of a complete report of opacity observations to the AQD within 60 days following the last date of the evaluation. **(40 CFR 60.18(f)(1), 40 CFR 60.752(b)(2)(iii)(A))**

3. When raw landfill gas (not pipeline-conditioned gas from the RNG facility) is routed directly to FGNEWFLARES, gas sampling shall occur within one business day and shall continue weekly, at a minimum, thereafter as long as flaring continues. During flaring of raw landfill gas, the permittee shall do the following:
 - a) The hydrogen sulfide (H₂S) or total reduced sulfur (TRS) equivalent content of the raw landfill gas burned in FGNEWFLARES, weekly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc.) and semi-annually by gas sampling using an EPA approved method and laboratory analysis, at the owner's expense, in accordance with Department requirements.
 - (i) Within an hour of the time each gas sample taken, the permittee shall record the actual landfill gas flow to the flare(s).
 - (ii) Calculate the SO₂ emissions, in pounds per hour (pph) at each operating flare using the gas sampling result and recorded flare gas flow at the time of sampling using Appendix A.
 - b) If, at any time, the SO₂ emissions exceeds 30 pounds per hour (pph) for the two flares combined the permittee shall route the gas through the desulfurization process before flaring. The permittee shall also review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of any corrective actions taken. Thereafter, the permittee shall:
 - (i) Use either Appendix A or B to determine when sulfur removal is no longer required. Once sulfur concentrations and gas flow rates are maintained at levels below 30 pph for at least five (5) consecutive business days, the permittee may bypass the desulfurization process and resume weekly monitoring.

The permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to the first test for each type of gas sampling. Thereafter, the permittee shall submit a test plan upon the request of the AQD District Supervisor or if any changes are made to the approved testing protocol. The permittee may petition the AQD District Supervisor to reduce the frequency of gas sampling of the landfill gas. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.2001, R 336.2003, R 336.2004, R 336.2802(4))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the 30th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911, R 336.2803, R 336.2804, 40 CFR 60.756, 40 CFR 60.758)**
2. The permittee shall continuously monitor and record the gas flow rate for EUUF1 and EUUF2 as specified in 40 CFR 60.756(c) and SC III.2. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1331, R 336.1702(a), R 336.1910, R 336.2803, R 336.2804, 40 CFR 60.756(b)(1) & (2), 40 CFR 63.1955(a))**
3. The permittee shall maintain a record the following information for FGNEWFLARES:
 - a) The maximum annual expected landfill gas generation flow rate. **(40 CFR 60.758(b)(1)(i))**
 - b) All visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in 40 CFR 60.18, continuous records of the flare pilot flame or flare flame monitoring, and records of all periods of operations during which the pilot flame or the flare flame is absent. **(40 CFR 60.758(b)(4))**The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1331, R 336.1702(a), R 336.1910, R 336.2803, R 336.2804, 40 CFR 60.758, 40 CFR 63.1955(a))**
4. The permittee shall keep up-to-date, readily accessible records of all control system exceedances of the operational standards in 40 CFR 60.753. **(40 CFR 60.758(e))**

5. The permittee shall monitor and record, in a satisfactory manner, the monthly net heating value (BTU/scf) of the landfill gas burned in EUUF1 and EUUF2. The net heating value shall be used to calculate the heat input on a monthly basis. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702(a), R 336.2803, R 336.2804)**
6. The permittee shall keep, in a satisfactory manner, all records related to, or as required by, the PM / MAP for EUUF1 and EUUF2. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, R 336.2803, R 336.2804)**
7. The permittee shall keep, in a satisfactory manner, records of gas sampling and analysis for H₂S and TRS concentration in the raw landfill gas routed to FGNEWFLARES and any corrective actions taken to determine exceedance of sampling concentrations. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1901, R 336.2803, R 336.2804)**
8. The permittee shall calculate and keep, in a satisfactory manner, records of hourly, monthly and 12-month rolling total SO₂ mass emissions for EUUF1 and EUUF2. Calculations shall be performed according to Appendix A or other method as approved by the AQD District Supervisor. The calculations shall utilize, at a minimum, weekly gas sampling data collected from SC V.3, the daily gas usage, daily hours of operation, gas flow to the flare, and the ratio of total sulfur to sulfur as H₂S from the most recent semi-annual laboratory test. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.2803, R 336.2804)**
9. The permittee shall calculate and keep, in a satisfactory manner, records of hourly, monthly and 12-month rolling NO_x and CO mass emissions for EUUF1 and EUUF2. Calculations shall be performed according to Appendix A. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.2803, R 336.2804)**
10. The permittee shall keep, in a satisfactory manner, records of the daily and monthly hours of operation and the type of gas burned (i.e., raw landfill gas, desulfurized gas, or RNG) for EUUF1 and EUUF2. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.2803, R 336.2804)**
11. The permittee shall keep, in a satisfactory manner, records of when EUUF1 or EUUF2 is not operating. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.2803, R 336.2804)**

VII. REPORTING

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of FGNEWFLARES. **(R 336.1201(7)(a))**
2. The permittee shall submit to the AQD District Supervisor, annual reports of the recorded information below for FGNEWFLARES. The initial annual report shall be submitted within 180 days of installation and start-up of the collection and control system and shall include the initial performance test report required under 40 CFR 60.8. For open flares combustion devices, reportable exceedances are defined under 40 CFR 60.757.
 - a) Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(c), for temperature and gas flow rate. **(40 CFR 60.757(f)(1))**
 - b) Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified under 40 CFR 60.756(b). **(40 CFR 60.757(f)(2))**
 - c) Description and duration of all periods when the control device was not operating for a period exceeding 1-hour and length of time the control device was not operating. **(40 CFR 60.757(f)(3))**

- d) All periods when the collection system was not operating in excess of 5 days. **(40 CFR 60.757(f)(4))**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVUF1	16	45	R 336.1225, R 336.2803, R 336.2804
2. SVUF2	12	35	R 336.1225, R 336.2803, R 336.2804

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources for Municipal Solid Waste Landfills as specified in 40 CFR Part 60 Subparts A and WWW, as they apply to EUUF1 and EUUF2. **(40 CFR Part 60 Subparts A & WWW)**
2. Compliance with 40 CFR Part 63, Subpart AAAA is determined in the same way it is determined for 40 CFR Part 60, Subpart WWW, including performance testing, monitoring of the collection system, continuous parameter monitoring, and other credible evidence. In addition, continuous parameter monitoring data collected under 40 CFR 60.756(b)(1), as specified in SC VI.2, are used to demonstrate compliance with the operating conditions for the open flares. The permittee shall have developed and implemented a written PM / MAP plan according to the provision in 40 CFR 63.6(e)(3) for EUUF1 and EUUF2. A copy of the SSM plan shall be maintained on site. **(40 CFR 63.1960)**

APPENDIX A

Calculations for Criteria Pollutants

SO₂ Mass Emissions

The following calculation for SO₂ emissions shall utilize the actual gas flow, actual hours of operation, and the sulfur concentration from gas sampling and/or a gas chromatograph.

$$SO_2 = [(scfm) \times (60 \text{ min/hr}) \times (\text{ppm}_{V_{TRS}} * 1E-06) \times (MW_{SO_2})] \div [(R \times T)] = \text{pph} \times (H) = \text{pounds/day}$$

Where:

scfm = standard cubic feet per minute gas flow

ppm_{V_{TRS}} = parts per million by volume of Total Reduced Sulfur (TRS) in the gas

MW_{SO₂} = Molecular Weight of SO₂ = 64.066 lb/lb-mol

H = Actual Hours of Operation per day

R = Universal Gas Constant = 0.7302 atm-ft³/lb-mol-R

T = Standard Temperature (absolute) = 519 R

NO_x and CO Mass Emissions

The following calculation for NO_x and CO emissions shall utilize the actual HHV of the gas, gas flow rate, and hours of operation.

$$NO_x \text{ or } CO = [(HI) \times (EF)] = \text{pph} \times (H) = \text{pounds/day}$$

$$HI = (HHV) \times (scfm) \times (1/1.0E+06) \times 60 \text{ min/hr}$$

Where:

EF_{NO_x} = 0.068 lb/MMBTU (open flare)

EF_{CO} = 0.37 lb/MMBTU (open flare)

scfm = standard cubic feet per minute gas flow

H = Actual Hours of Operation per day

HI = Heat Input (MMBTU/hr)

HHV = Average Hourly LFG Higher Heating Value (BTU/ft³)

APPENDIX B
Flare SO₂ Estimation Table

HRS RHS	(ppmv) (ppmv) ¹	UF-1 & UF-2 Maximum Combined Permitted Emission Limit 402 bs/hr																				
		Maximum Combined Emission Limit Prior to Using Desulfurization 300 bs/hr																				
190	194	200	204	210	214	220	224	230	234	240	244	250	254	260	264	270	274	280	284	290	294	
0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.8	2.0	2.2	2.3	2.5	2.8	2.8	3.0	3.1	3.3	3.5	3.6	3.8
0.4	0.5	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7	2.9	3.2	3.5	3.7	4.0	4.4	4.5	4.8	5.1	5.3	5.6	5.9	6.1
0.4	0.7	1.1	1.5	1.8	2.2	2.8	3.3	3.7	4.0	4.4	4.8	5.2	5.5	5.9	6.3	6.6	7.0	7.4	7.7	8.1	8.5	8.8
0.5	0.9	1.4	1.9	2.3	2.8	3.3	3.8	4.2	4.7	5.2	5.6	6.1	6.6	7.0	7.5	8.0	8.4	8.9	9.4	9.9	10.3	10.8
0.6	1.1	1.7	2.3	2.9	3.4	4.0	4.6	5.1	5.7	6.3	6.8	7.4	8.0	8.6	9.1	9.7	10.3	10.8	11.4	12.0	12.5	13.1
0.7	1.3	2.0	2.7	3.4	4.0	4.7	5.4	6.0	6.7	7.4	8.1	8.7	9.4	10.1	10.7	11.4	12.1	12.8	13.4	14.1	14.8	15.4
0.8	1.5	2.3	3.1	3.9	4.6	5.4	6.2	7.0	7.7	8.5	9.3	10.0	10.8	11.6	12.4	13.1	13.9	14.7	15.5	16.3	17.0	17.8
0.9	1.7	2.6	3.5	4.4	5.2	6.1	7.0	7.9	8.7	9.6	10.5	11.4	12.2	13.1	14.0	14.9	15.7	16.6	17.5	18.4	19.2	20.1
1.0	2.0	2.9	3.9	4.9	5.9	6.8	7.8	8.8	9.8	10.7	11.7	12.7	13.7	14.6	15.6	16.6	17.6	18.5	19.5	20.5	21.5	22.4
1.0	2.2	3.2	4.3	5.4	6.5	7.5	8.6	9.7	10.8	11.8	12.9	14.0	15.1	16.1	17.2	18.3	19.4	20.4	21.5	22.6	23.7	24.8
1.1	2.4	3.5	4.7	5.8	7.1	8.2	9.4	10.6	11.8	13.0	14.1	15.3	16.5	17.7	18.8	20.0	21.2	22.4	23.5	24.7	25.9	27.1
1.2	2.6	3.8	5.1	6.4	7.7	9.0	10.2	11.5	12.8	14.1	15.3	16.6	17.9	19.2	20.5	21.7	23.0	24.2	25.5	26.8	28.1	29.4
1.3	2.8	4.1	5.4	6.7	8.1	9.4	10.7	12.0	13.3	14.6	15.9	17.2	18.5	19.8	21.1	22.4	23.7	25.0	26.3	27.6	28.9	30.2
1.4	2.9	4.2	5.5	6.9	8.3	9.7	11.0	12.4	13.8	15.2	16.6	17.9	19.3	20.7	22.1	23.5	24.9	26.2	27.6	29.0	30.4	31.7
1.4	3.0	4.4	5.8	7.2	8.6	10.0	11.4	12.8	14.2	15.6	17.0	18.4	19.8	21.2	22.6	24.0	25.4	26.8	28.2	29.6	31.0	32.4
1.5	3.1	4.5	5.9	7.3	8.7	10.1	11.5	12.9	14.3	15.7	17.1	18.5	19.9	21.3	22.7	24.1	25.5	26.9	28.3	29.7	31.1	32.5
1.6	3.2	4.6	6.0	7.4	8.8	10.2	11.6	13.0	14.4	15.8	17.2	18.6	20.0	21.4	22.8	24.2	25.6	27.0	28.4	29.8	31.2	32.6
1.7	3.3	4.7	6.1	7.5	8.9	10.3	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.5	22.9	24.3	25.7	27.1	28.5	29.9	31.3	32.7
1.8	3.4	4.8	6.2	7.6	9.0	10.4	11.8	13.2	14.6	16.0	17.4	18.8	20.2	21.6	23.0	24.4	25.8	27.2	28.6	29.9	31.3	32.7
1.9	3.5	4.9	6.3	7.7	9.1	10.5	11.9	13.3	14.7	16.1	17.5	18.9	20.3	21.7	23.1	24.5	25.9	27.3	28.7	30.0	31.4	32.8
2.0	3.6	5.0	6.4	7.8	9.2	10.6	12.0	13.4	14.8	16.2	17.6	19.0	20.4	21.8	23.2	24.6	26.0	27.4	28.8	30.1	31.5	32.9
2.1	3.7	5.1	6.5	7.9	9.3	10.7	12.1	13.5	14.9	16.3	17.7	19.1	20.5	21.9	23.3	24.7	26.1	27.5	28.9	30.2	31.6	33.0
2.2	3.8	5.2	6.6	8.0	9.4	10.8	12.2	13.6	15.0	16.4	17.8	19.2	20.6	22.0	23.4	24.8	26.2	27.6	29.0	30.3	31.7	33.1
2.3	3.9	5.3	6.7	8.1	9.5	10.9	12.3	13.7	15.1	16.5	17.9	19.3	20.7	22.1	23.5	24.9	26.3	27.7	29.1	30.4	31.8	33.2
2.4	4.0	5.4	6.8	8.2	9.6	11.0	12.4	13.8	15.2	16.6	18.0	19.4	20.8	22.2	23.6	25.0	26.4	27.8	29.2	30.5	31.9	33.3
2.5	4.1	5.5	6.9	8.3	9.7	11.1	12.5	13.9	15.3	16.7	18.1	19.5	20.9	22.3	23.7	25.1	26.5	27.9	29.3	30.6	32.0	33.4
2.6	4.2	5.6	7.0	8.4	9.8	11.2	12.6	14.0	15.4	16.8	18.2	19.6	21.0	22.4	23.8	25.2	26.6	28.0	29.4	30.7	32.1	33.5
2.7	4.3	5.7	7.1	8.5	9.9	11.3	12.7	14.1	15.5	16.9	18.3	19.7	21.1	22.5	23.9	25.3	26.7	28.1	29.5	30.8	32.2	33.6
2.8	4.4	5.8	7.2	8.6	10.0	11.4	12.8	14.2	15.6	17.0	18.4	19.8	21.2	22.6	24.0	25.4	26.8	28.2	29.6	30.9	32.3	33.7
2.9	4.5	5.9	7.3	8.7	10.1	11.5	12.9	14.3	15.7	17.1	18.5	19.9	21.3	22.7	24.1	25.5	26.9	28.3	29.7	31.0	32.4	33.8
3.0	4.6	6.0	7.4	8.8	10.2	11.6	13.0	14.4	15.8	17.2	18.6	20.0	21.4	22.8	24.2	25.6	27.0	28.4	29.8	31.1	32.5	33.9
3.1	4.7	6.1	7.5	8.9	10.3	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.5	22.9	24.3	25.7	27.1	28.5	29.9	31.2	32.6	34.0
3.2	4.8	6.2	7.6	9.0	10.4	11.8	13.2	14.6	16.0	17.4	18.8	20.2	21.6	23.0	24.4	25.8	27.2	28.6	29.9	31.3	32.7	34.1
3.3	4.9	6.3	7.7	9.1	10.5	11.9	13.3	14.7	16.1	17.5	18.9	20.3	21.7	23.1	24.5	25.9	27.3	28.7	30.0	31.4	32.8	34.2
3.4	5.0	6.4	7.8	9.2	10.6	12.0	13.4	14.8	16.2	17.6	19.0	20.4	21.8	23.2	24.6	26.0	27.4	28.8	30.1	31.5	32.9	34.3
3.5	5.1	6.5	7.9	9.3	10.7	12.1	13.5	14.9	16.3	17.7	19.1	20.5	21.9	23.3	24.7	26.1	27.5	28.9	30.2	31.6	33.0	34.4
3.6	5.2	6.6	8.0	9.4	10.8	12.2	13.6	15.0	16.4	17.8	19.2	20.6	22.0	23.4	24.8	26.2	27.6	29.0	30.3	31.7	33.1	34.5
3.7	5.3	6.7	8.1	9.5	10.9	12.3	13.7	15.1	16.5	17.9	19.3	20.7	22.1	23.5	24.9	26.3	27.7	29.1	30.4	31.8	33.2	34.6
3.8	5.4	6.8	8.2	9.6	11.0	12.4	13.8	15.2	16.6	18.0	19.4	20.8	22.2	23.6	25.0	26.4	27.8	29.2	30.5	31.9	33.3	34.7
3.9	5.5	6.9	8.3	9.7	11.1	12.5	13.9	15.3	16.7	18.1	19.5	20.9	22.3	23.7	25.1	26.5	27.9	29.3	30.6	32.0	33.4	34.8
4.0	5.6	7.0	8.4	9.8	11.2	12.6	14.0	15.4	16.8	18.2	19.6	21.0	22.4	23.8	25.2	26.6	28.0	29.4	30.7	32.1	33.5	34.9
4.1	5.7	7.1	8.5	9.9	11.3	12.7	14.1	15.5	16.9	18.3	19.7	21.1	22.5	23.9	25.3	26.7	28.1	29.5	30.8	32.2	33.6	35.0
4.2	5.8	7.2	8.6	10.0	11.4	12.8	14.2	15.6	17.0	18.4	19.8	21.2	22.6	24.0	25.4	26.8	28.2	29.6	30.9	32.3	33.7	35.1
4.3	5.9	7.3	8.7	10.1	11.5	12.9	14.3	15.7	17.1	18.5	19.9	21.3	22.7	24.1	25.5	26.9	28.3	29.7	31.0	32.4	33.8	35.2
4.4	6.0	7.4	8.8	10.2	11.6	13.0	14.4	15.8	17.2	18.6	20.0	21.4	22.8	24.2	25.6	27.0	28.4	29.8	31.1	32.5	33.9	35.3
4.5	6.1	7.5	8.9	10.3	11.7	13.1	14.5	15.9	17.3	18.7	20.1	21.5	22.9	24.3	25.7	27.1	28.5	29.9	31.2	32.6	34.0	35.4
4.6	6.2	7.6	9.0	10.4	11.8	13.2	14.6	16.0	17.4	18.8	20.2	21.6	23.0	24.4	25.8	27.2	28.6	29.9	31.3	32.7	34.1	35.5
4.7	6.3	7.7	9.1	10.5	11.9	13.3	14.7	16.1	17.5	18.9	20.3	21.7	23.1	24.5	25.9	27.3	28.7	30.0	31.4	32.8	34.2	35.6
4.8	6.4	7.8	9.2	10.6	12.0	13.4	14.8	16.2	17.6	19.0	20.4	21.8	23.2	24.6	26.0	27.4	28.8	30.1	31.5	32.9	34.3	35.7
4.9	6.5	7.9	9.3	10.7	12.1	13.5	14.9	16.3	17.7	19.1	20.5	21.9	23.3	24.7	26.1	27.5	28.9	30.2	31.6	33.0	34.4	35.8
5.0	6.6	8.0	9.4	10.8	12.2	13.6	15.0	16.4	17.8	19.2	20.6	22.0	23.4	24.8	26.2	27.6	29.0	30.3	31.7	33.1	34.5	35.9
5.1	6.7	8.1	9.5	10.9	12.3	13.7	15.1	16.5	17.9	19.3	20.7	22.1	23.5	24.9	26.3	27.7	29.1	30.4	31.8	33.2	34.6	36.0
5.2	6.8	8.2	9.6	11.0	12.4	13.8	15.2	16.6	18.0	19.4	20.8	22.2	23.6	25.0	26.4	27.8	29.2	30.5	31.9	33.3	34.7	36.1
5.3	6.9	8.3	9.7	11.1	12.5	13.9	15.3	16.7	18.1	19.5	20.9	22.3	23.7	25.1	26.5	27.9	29.3	30.6	32.0	33.4	34.8	36.2
5.4	7.0	8.4	9.8	11.2	12.6	14.0	15.4	16.8	18.2	19.6	21.0	22.4	23.8	25.2	26.6	28.0	29.4	30.7	32.1	33.5	34.9	36.3
5.5	7.1	8.5	9.9	11.3	12.7	14.1	15.5	16.9	18.3	19.7	21.1	22.5	23.9	25.3	26.7	28.1	29.5	30.8	32.2	33.6	35.0	36.4
5.6	7.2	8.6	10.0	11.4	12.8	14.2	15.6	17.0	18.4	19.8	21.2	22.6	24.0	25.4	26.8	28.2	29.6	30.9	32.3	33.7	35.1	36.5
5.7	7.3	8.7	10.1	11.5	12.9	14.3	15.7	17.1	18.5	19.9	21.3	22.7	24.1	25.5	26.9	28.3	29.7	31.0	32.4			