

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

MAY 6, 2021

PERMIT TO INSTALL

185-20

ISSUED TO

BRIGHTMARK WILLOW POINT RNG, LLC

LOCATED AT

235 PINE STREET, SUITE 1100
SAN FRANCISCO, CALIFORNIA 94104

IN THE COUNTY OF

IONIA

STATE REGISTRATION NUMBER

P1157

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: April 6, 2021	
DATE PERMIT TO INSTALL APPROVED: May 6, 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 _{2e}	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))	Flexible Group ID
EUGCU	Gas Cleaning and upgrading Unit to upgrade the raw anaerobic digester gas for better energy output. Controlled with an 125 scfm Thermal Oxidizer	FGFLARE
EUFLARE	A 305 scfm Flare that burns off-spec gas or excess digester gas	FGFLARE

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
FGFLARE	One gas cleaning and upgrading unit and one flare combined are capable of burning up to 305 scfm giving a heat input capacity of 11.9 MMBtu/hr when using the estimated higher heating value of the digester gas of 650 Btu/scf.	EUGCU, EUFLARE

**FGFLARE
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

One gas cleaning and upgrading unit and one flare combined are capable of burning up to 305 scfm giving a heat input capacity of 11.9 MMBtu/hr when using the estimated higher heating value of the digester gas of 650 Btu/scf.

Emission Unit: EUGCU, EUFLARE

POLLUTION CONTROL EQUIPMENT

Thermal oxidizer for EUGCU

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. SO ₂	39.9 tpy	12-month rolling time period as determined at the end of each calendar month	FGFLARE	SC VI.5	R 336.1205, 40 CFR 52.21(c) & (d)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Biogas	160.3 MMscf/yr	12-month rolling time period as determined at the end of each calendar month	FGFLARE	SC VI.4	R 336.1205, R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d)
2. Biogas	65.7 MMscf/yr	12-month rolling time period as determined at the end of each calendar month	Into the thermal oxidizer of EUGCU	SC VI.4	R 336.1205, R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d)
3. H ₂ S concentration of the biogas	2,950 ppmv	Calendar month average	EUFLARE	SC VI.8	R 336.1205, 40 CFR 52.21(c) & (d)
4. H ₂ S concentration of the biogas	7,200 ppmv	Calendar month average	Into the thermal oxidizer of EUGCU	SC VI.8	R 336.1205, 40 CFR 52.21(c) & (d)

5. The permittee shall burn only natural gas, or gas produced by the anaerobic digester (digester biogas) in EUFLARE. **(R 336.1205, R 336.1225, 40 CFR 52.21(c) & (d))**
6. The H₂S concentration of the biogas combusted in EUFLARE shall not exceed 3,500 ppmv. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d))**
7. The H₂S concentration of the biogas combusted in the thermal oxidizer of EUGCU shall not exceed 8,658 ppmv. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The volumetric feed rate for FGFLARES shall not exceed a maximum of 305 standard cubic feet per minute. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**
2. The volumetric feed rate for EUGCU shall not exceed a maximum of 125 standard cubic feet per minute. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**
3. No later than 90 days after the completion of installation of the equipment, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for FGFLARE. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate FGFLARE 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, R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**

4. No later than 90 days after permit issuance, the permittee shall submit, implement, and maintain a nuisance minimization plan for odors as described in Appendix A, for FGFLARE. If at any time the plan fails to address or inadequately addresses odor management, the permittee shall amend the plan within 45 days after such an event occurs. The permittee shall also amend the plan within 45 days if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the plan and any amendments to the plan to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the plan or amended plan shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to minimize odors. **(R 336.1901)**
5. No later than 90 days after the completion of installation of the equipment, the permittee shall submit to the AQD District Supervisor, for review and approval, Best Management Practices Plan (BMPP) for the use of ferric chloride to reduce the H₂S concentration in the digester. The BMPP plan, at a minimum, should include the following:
 - a) A detailed plan for when ferric chloride should be added into the digester, including parameters that will be monitored, the amount and what frequency the ferric chloride will be added.
 - b) A detail plan explaining how the ferric chloride will reduce the H₂S concentration in the digester.
 - c) The normal operating range of the H₂S concentration in the digester

If at any time the BMPP fails to address or inadequately addresses the addition of ferric chloride into the digester, the permittee shall amend the PM / MAP within 45 days after such an event occurs. The permittee shall also amend the BMPP within 45 days, if new equipment is installed or upon request from the AQD District Supervisor. The permittee shall submit the BMPP and any amendments to the BMPP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the

BMPP or amended BMPP 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, 40 CFR 52.21(c) & (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, acceptable to the AQD District Supervisor, a device to monitor and record the volumetric flow rate of digester gas burned in each emission unit within FGFLARE, on a continuous basis. **(R 336.1205, R 336.1224, R 336.1225, R 336.1901, 40 CFR 52.21(c) & (d))**
2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, acceptable to the AQD District Supervisor, a device to monitor and record the H₂S concentration in EUFLARE and into the thermal oxidizer of EUGCU. The permittee shall monitor and record the concentrations at each location at a minimum of once per day. **(R 336.1205, R 336.1224, R 336.1225, R 336.1901, 40 CFR 52.21(c) & (d))**
3. The permittee shall not operate EUGCU unless the thermal oxidizer is installed, maintained, and operated in a satisfactory manner, acceptable to the AQD District Supervisor. Satisfactory manner includes maintaining a minimum combustion chamber temperature of 1450°F and operating and maintaining the equipment in accordance with the MAP required in SC III.3. **(R 336.1205, R 336.1224, R 336.1225, R 336.1910, 40 CFR 52.21(c) & (d))**
4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, acceptable to the AQD District Supervisor, a temperature monitoring device in the combustion chamber of the thermal oxidizer to monitor and record the temperature, on a continuous basis, during operation of EUGCU. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

NA

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, R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**
2. The permittee shall keep, in a satisfactory manner, acceptable to the AQD District Supervisor, all records related to, or as required by, the PM / MAP. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) & (d))**
3. The permittee shall keep, in a satisfactory manner, acceptable to the AQD District Supervisor, records of the H₂S content of the biogas routed to each EUFLARE and EUGCU. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) & (d))**
4. The permittee shall keep, in a satisfactory manner, acceptable to the AQD District Supervisor, records of the total volume (MMscf) of biogas burned in each EUFLARE and EUGCU on a monthly and 12-month rolling time period. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**
5. The permittee shall monitor and record, in a satisfactory manner acceptable to the AQD District Supervisor, the temperature in the combustion chamber of the thermal oxidizer, on a continuous basis, during operation of EUGCU. Temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) & (d))**

6. The permittee shall calculate and keep, in a satisfactory manner, acceptable to the AQD District Supervisor, records of the monthly average the H₂S concentration in the biogas sent to EUFLARE and the biogas sent to the thermal oxidizer of EUGCU. For each calendar month, the monthly average H₂S concentration shall be calculated as an average of all the daily readings or daily averages, if multiple readings are taken in a single day, taken within the calendar month. Calculations shall be performed using data collected through the devices required in SC IV.1 and SC IV.2. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205, 40 CFR 52.21(c) & (d))**
7. The permittee shall calculate and keep, in a satisfactory manner, acceptable to the AQD District Supervisor, records of monthly and 12-month rolling total SO₂ mass emissions for FGFLARES. Calculations shall be performed using data collected through the devices required in SC IV.1 and SC IV.2. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205, 40 CFR 52.21(c) & (d))**

VII. REPORTING

NA

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. SVGCU (thermal oxidizer)	36	18	40 CFR 52.21(c) & (d)
2. SVFLARE	6	15	40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

NA

APPENDIX A

Nuisance Minimization Plan: Odors

I. Introduction

Purpose, description of each potential source of odors, permit number, background information, etc.

II. Potential Sources of Odorous Emissions and Related Equipment

Listing of equipment at source that could generate potential odors. Identify process and/or equipment, control equipment (if applicable), and any other information necessary to aid in addressing a complaint if received.

III. Maintenance Schedule

Description of maintenance schedule for equipment, procedures, etc.

IV. Best Management Practices/Housekeeping Measures

Identify best management practices and housekeeping measures the source will use to aid in the minimization of odorous emissions. Explain how odors will be minimized during all startups, shutdowns, and malfunctions. The plan shall incorporate procedures recommended by the equipment manufacturer(s), as well as incorporating standard industry practices.

V. Odor Incident Notification/Investigation/Response

Describe procedures that shall be taken to address odor complaints. Identify the individual(s) at the facility who will be responsible for initiating the response procedures upon the receipt of an odor complaint notification from the AQD, a neighbor, or other source. The response should include taking records that include the date and time of the complaint, meteorological data for the timeframe specified in the complaint, identification of the equipment/process that is most likely to be the source of the complaint, steps taken to identify any maintenance or corrective action necessary for the equipment involved, and other measures utilized by the permittee to address the complaint.