

From: [Laura Niemann](#)
To: [EGLE-ROP](#)
Cc: [Konanahalli, Iranna \(EGLE\); "Williams, Matt"](#)
Subject: N6207 - ROP Renewal Application
Date: Wednesday, November 16, 2022 7:32:18 AM
Attachments: [N6207 Smiths Creek ROP Renewal Application Nov 16 2022.pdf](#)
[marked up N6207 Final 06-07-18.docx](#)
[SM Fed plan temp ROP Landfills NMOC.docx](#)
[SM ROP Renewal Application Form.docx](#)
[SM Temp ROP Landfills MACT AAAA.docx](#)
[Appendix A Landfill Gas and NMOC Output.xls](#)
[LF_HAPS.xls](#)
[ROP Renewal SCL Fugitive Dust.xls](#)
[curve 2 landgem-v303.xlsm](#)
[landgem-v303.xlsm](#)
[LandGEM Out SM Curve 1.xlsx](#)
[LandGEM Out SM Curve 2.xlsx](#)
[SmithCreek Leachate Water9.xlsx](#)

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Hello –

Attached is a pdf of the ROP renewal application for Smiths Creek Landfill in St. Clair County, Michigan. A hard copy of the application, with the original signature of the Responsible Official, is being overnighted to Ms. Joyce Zhu under separate cover.

Also attached as required is a marked-up (redline) copy of the current ROP permit, all of the application forms and templates included in the pdf, and the excel files for the calculations provided in Appendix A.

Please let me know if you need anything else to process this renewal application.

Thank you –

Laura Niemann
EIL
616-891-2592



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November 16, 2022

Ms. Joyce Zhu, Warren District Supervisor
EGLE - Air Quality Division
Southeast Michigan District Office
27700 Donald Court
Warren, Michigan 48092
Fed Ex Tracking No. 7705 0655 5637
AND Electronically 11/16/2022

RE: Smiths Creek Landfill
ROP Permit No: MI-ROP-N6207-2018
Renewable Operating Permit (ROP) Application

Dear Ms. Zhu:

On behalf of Smiths Creek Landfill, EIL respectfully submits the attached Renewable Operating Permit (ROP) application for the Smiths Creek Landfill in Smiths Creek, Michigan.

Included in this application package are all the required documents for an administratively complete ROP renewal package including:

- A description of the subject facility
- Emissions calculations for the various emissions units at the facility
- All required MDEQ Forms (with Responsible Official Certification)
- Existing ROP mark-up for requested revisions

Please note that the current ROP contains two sections – one for the Smiths Creek Landfill, and one for Blue Water Renewables, LLC (Blue Water), a third party landfill gas-to-energy plant. Blue Water is submitting their renewal application under separate cover.

Additionally, there were two major regulatory changes that occurred during the past five year permit term. The Landfill NESHAP (40 CFR 63 Subpart AAAAA) was significantly revised by EPA on March 26, 2020 with an effective date of September 27, 2021 for the revisions. The Federal Plan was promulgated on May 21, 2021 and became effective on June 21, 2021. This regulation replaced the old Landfill NSPS (Subpart WWW).

EGLE has developed templates for ROP applications to incorporate both of these regulations into ROP renewal permits and these templates are included in the application for Smiths Creek.

One (1) hard copy with the original signature of the Responsible Official is included with this submittal. An electronic copy has been emailed to EGLE-ROP@Michigan.gov.

If you have any questions, please contact Matt Williams at mwilliams@stclaircounty.org or (810) 989-6979, or myself at lniemann@eilllc.com or (616) 891-2592.

Sincerely,
Environmental Information Logistics, LLC



Laura L. Niemann, P.E.
Senior Project Engineer

Cc: Matt Williams, Smith's Creek Landfill
Iranna Konanahalli, EGLE (e-copy)
Maureen Bennett, DTE Vantage (e-copy - Letter only)

**SMITHS CREEK LANDFILL
MI-ROP-N6207-2018**



Renewable Operating Permit (ROP) Application

**Smiths Creek
St. Clair County, Michigan**

November, 2022

Prepared by:

**Environmental Information Logistics, LLC
130 E. Main Street
Caledonia, MI 49316**

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Section 1

INTRODUCTION

Smiths Creek Landfill (Smiths Creek) is an active municipal solid waste landfill located in Smiths Creek, St. Clair County, Michigan. On June 7, 2018, the Michigan Department of Environment, Great Lakes and Energy (EGLE) issued a Renewable Operating Permit (ROP) for the facility which included the following emission units in Section 1 of the permit:

EMISSION UNIT SUMMARY TABLE

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-LANDFILL-SCL1	This emission unit represents the Municipal Solid Waste (MSW) Landfill.	12/31/1989	NA
EU-ALGCS-SCL1	This emission unit represents the active landfill gas collection system at the landfill. Gas moving equipment draws landfill gas from the wells and delivers it to an open flare. An open flare which combusts landfill gas at active landfill when not burned in SI RICE engines for electric power generation.	10/31/2002	FG-LGCS-SCL1
EU-OPENFLARE-SCL1	The flare is a combustor without enclosure or shroud.	10/31/2002	FG-CONTROLS-SCL1
EU-VENTFLARE-SCL1	Consists of six self-igniting (solar powered) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of the solar flares was performed on March 18, 2003; and, therefore, is not required by this table.	10/31/2002	FG-CONTROLS-SCL1
EU-BIOREACTOR-SCL1	Represents the portion of the landfill that is expected to be operated as a bioreactor.	08/03/2006	NA
EU-ASBESTOS-SCL1	Any active or inactive asbestos disposal site.	NA	NA
EU-GENERAC-28HP-NG (Generac)	NSPS 4J Emergency Generator. Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.	03/22/2015	FG-EMERGENS-SCL1
EU-KOHLER-18HP-NG (Kohler)	NSPS 4J Emergency Generator. Installed June 2016. Manufacture date is February 25, 2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.	06/2013	FG-EMERGENS-SCL1
EU-PLGCS-SCL1	This emission unit represents the passive landfill gas collection system at the landfill. This passive system consists of a series of perforated pipes buried in the waste, which delivers landfill gas to one of the six self-igniting (solar power) vent flares where it is combusted.	10/31/2002	FG-LGCS-SCL1

The ROP permit does not list any insignificant activities. As required, this application includes an updated list of activities which are required to be included in a renewal application.

Smiths Creek is requesting a renewal of the ROP Permit, with appropriate updates, clarifications and modifications, in accordance with R336.1217. A summary of requested updates to the current permit is provided in this application. These include:

- Emissions Calculation Updates for several significant activities (fugitive landfill and road dust), compliance calculations to demonstrate regulatory non-applicability (leachate storage tank and 40 CFR 60 Subpart Kb) and an updated list of insignificant activities (Part D, EGLE Form EQP 6000);
- Addition of a new control device identical to other control devices already listed in the ROP (solar vent flare – EUVENTFLARE);
- Addition of an existing emissions unit (used oil burner) into the permit; and
- New applicable regulations and corresponding marked-up ROP Templates (40 CFR 20 Subpart OOO & updated 40 CFR 63 Subpart AAAA).

Application forms are provided in Section 2. A site map is included in Appendix B, and a process flow diagram is provided in Appendix C.

REQUESTED UPDATES TO CURRENT PERMIT

- Emissions Calculation Updates

The landfill gas curve (EPA LandGEM model) has been updated with actual MSW waste receipts at the facility since the last ROP renewal application was prepared in 2016. The curve was extended to the landfill's current anticipated closure date of 2062.

Calculations for fugitive dust from haul roads will also be updated based on changes to the length of paved and unpaved haul roads traveled by refuse vehicles over the next five year ROP permit cycle.

Lastly, calculations of emissions from the 100,000 gallon leachate storage tank were prepared. The non-applicability of 40 CFR 60 Subpart Kb is demonstrated using the vapor pressures of the volatile organic compounds detected in the site's leachate.

- Addition of a 7th solar vent flare

During the second quarter 2022 surface emissions monitoring event, an exceedance was measured three times in one quarter at the Cell 7 Sump Riser cover penetration. The installation of a solar flare at this location within 120 days of the initial exceedance constitutes a "new well or other collection device" as required by 40 CFR 63.1960(c)(4)(v).

A Notification of Off-Permit Change was submitted to EGLE on September 8, 2022 to add the new solar flare to the ROP. A Permit to Install was not required since this type of flare is exempt from PTI permitting pursuant to Rule 336.1285(aa). Calculations of potential emissions from this

flare were provided in the notification and are therefore not included in this renewal application.

No changes to the ROP were required (other than updating the number of solar flares) since this type of unit already exists at the facility and monitoring, recordkeeping and reporting conditions are included in the ROP under EUVENTFLARE.

- Addition of an existing emissions unit (used oil burner)

During an emissions inventory conducted by the site's air compliance consultant in June, 2022, a used oil burner was discovered to be mounted on the wall of the maintenance facility occupied by Talaski Excavating, LLC (Talaksi). Talaski is contracted by St. Clair County to operate and maintain the landfill. At the time of the inventory, the oil burner was disconnected and did not appear to be functional. However, per emails with Talaski, they have reconnected the 175,000 BTU/hour burner and plan to use it to heat the maintenance building during cold weather. The used oil is sourced from landfill site equipment and is stored in the burner's reservoir tank, and drums if needed.

This type of heating unit appears to be exempt from air permitting per Michigan Rule 212(4)(c) and is insignificant per Michigan Rule 1282(b)(iv) as follows:

Waste oil or used oil fuels that are generated on the geographical site and the equipment has a rated heat input capacity of not more than 500,000 Btu per hour.

- New Applicable Federal Regulation (40 CFR 62 Subpart OOO)

As described in greater detail in Section 3 of this application, USEPA recently promulgated 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. These applicable regulations went into effect on June 21, 2021. This rule, 40 Code of Federal Regulations (CFR) 62, Subpart OOO, hereinafter referred to as the "Federal Plan", applies to landfills such as Smiths Creek that are in states where a state plan has not been approved, such as Michigan.

- Revised Applicable Federal Regulation (40 CFR 63 Subpart AAAA)

On March 26, 2020, USEPA promulgated significant amendments to the National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfill; 40 CFR Part 63, Subpart AAAA (i.e., the Landfill NESHAP). These amendments became fully effective on September 27, 2021.

In accordance with the Federal Plan §§62.16716, 16720 and 16722, once a facility begins to comply with the operational standards, compliance provisions and monitoring provisions of the Landfill NESHAP, those equivalent provisions from the Federal Plan no longer apply. Select reporting and recordkeeping provisions of the Federal Plan also transitioned permanently into the equivalent NESHAP provision.

REQUESTED UPDATES TO INSIGNIFICANT EMISSIONS UNITS

List of All Insignificant Activities (Required to be listed in the ROP renewal application):

The following is the list of insignificant activities currently identified at the facility during an emissions inventory conducted earlier this year. EGLE requires that these activities be listed in renewal applications pursuant to R 336.1212(4) (Rule 212(4)) of the Michigan Air Pollution Control Rules, and they are included in Part D of EQP Form 6000:

- Two propane fired heaters in the maintenance shop (comfort and hot water heaters) less than 50 mmbtu/hr (Rule 336.1282(2)(b)(i));
- One used-oil furnace rated at less than 500,000 BTU/hour and only using oil generated on-site geographically (Rule 336.1282(b)(iv));
- Multiple natural gas heaters less than 50 mmbtu/hr in scalehouse, septage building and leachate pretreatment building (Rule 336.1282(2)(b)(i));
- One (1) propane storage tank (Rule 336.1284(2)(b));
- One (1) 250 gallon used oil tank (Rule 336.1284(2)(i));
- Grinding equipment for repair and maintenance (Rule 336.1285(2)(l)(vi)); and
- 100,000 gallon above-ground leachate storage tank (Rule 336.1285(2)(aa))

None of these activities were listed in the previous ROP renewal application.

List of All Insignificant Activities (NOT required to be listed in the ROP renewal application):

The following is the list of insignificant activities that are not required to be listed in renewal applications. However, the facility is including them to provide a complete inventory:

- Welding equipment in shop;
- Sludge tank in leachate pretreatment system; and
- Air strippers (3) for leachate pretreatment system (strips CO₂, nitrogen and ammonia).

APPLICATION FORMS

The following application forms are included in this section:

EGLE Form EQP 6000 – Renewal Application Form
EGLE Form AI-001A – Additional Information for Criteria Pollutants and HAPs
Draft Template Table for 40 CFR 63 Subpart AAAA
Draft Template Table for 40 CFR 62 Subpart OOO



RENEWABLE OPERATING PERMIT RENEWAL APPLICATION FORM

This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Refer to instructions for additional information to complete the Renewable Operating Permit Renewal Application Form.

GENERAL INSTRUCTIONS

This application form should be submitted as part of an administratively complete application package for renewal of a Renewable Operating Permit (ROP). This application form consists of nine parts. Parts A – H must be completed for all applications and must also be completed for each section of a sectioned ROP. Answer all questions in all parts of the form unless directed otherwise. Detailed instructions for this application form can be found at <http://michigan.gov/air> (select the Permits Tab, “Renewable Operating Permits (ROP)/Title V”, then “ROP Forms & Templates”).

PART A: GENERAL INFORMATION

Enter information about the source, owner, contact person and the responsible official.

SOURCE INFORMATION

SRN N6207	SIC Code 4953	NAICS Code 562212	Existing ROP Number MI-ROP-N6207-2012	Section Number (if applicable) 1
Source Name Smiths Creek Landfill				
Street Address 6779 Smiths Creek Rd.				
City Smiths Creek	State MI	ZIP Code 48074	County St. Clair County	
Section/Town/Range (if address not available)				
Source Description Smiths Creek Landfill is a type II municipal solid waste landfill with an active gas collection and control system and 7 stand alone solar flares used for the control of landfill gas generated by waste decomposition.				
<input type="checkbox"/> Check here if any of the above information is different than what appears in the existing ROP. Identify any changes on the marked-up copy of your existing ROP.				

OWNER INFORMATION

Owner Name St. Clair County	Section Number (if applicable) N/A			
Mailing address (<input type="checkbox"/> check if same as source address) 200 Grand River Avenue, Suite 201				
City Port Huron	State MI	ZIP Code 48060	County St. Clair	Country USA

Check here if any information in this ROP renewal application is confidential. Confidential information should be identified on an Additional Information (AI-001) Form.

PART A: GENERAL INFORMATION (continued)

At least one contact and responsible official must be identified. Additional contacts and responsible officials may be included if necessary.

CONTACT INFORMATION

Contact 1 Name Matthew Williams		Title Landfill Manager		
Company Name & Mailing address (<input checked="" type="checkbox"/> check if same as source address) 6779 Smiths Creek Rd.				
City Smiths Creek	State MI	ZIP Code 48074	County St. Clair	Country USA
Phone number 810-989-6979		E-mail address mwilliams@stclaircounty.org		

Contact 2 Name (optional)		Title		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address)				
City	State	ZIP Code	County	Country
Phone number		E-mail address		

RESPONSIBLE OFFICIAL INFORMATION

Responsible Official 1 Name Matthew Williams		Title Landfill Manager		
Company Name & Mailing address (<input checked="" type="checkbox"/> check if same as source address) 6779 Smiths Creek Rd.				
City Smiths Creek	State MI	ZIP Code 48074	County St. Clair	Country USA
Phone number 810-989-6979		E-mail address mwilliams@stclaircounty.org		

Responsible Official 2 Name (optional)		Title		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address)				
City	State	ZIP Code	County	Country
Phone number		E-mail address		

<input type="checkbox"/> Check here if an AI-001 Form is attached to provide more information for Part A. Enter AI-001 Form ID:

PART B: APPLICATION SUBMITTAL and CERTIFICATION by Responsible Official

Identify the items that are included as part of your administratively complete application in the checklist below. For your application to be complete, it must include information necessary to evaluate the source and to determine all applicable requirements. Answer the compliance statements as they pertain to all the applicable requirements to which the source is subject. The source's Responsible Official must sign and date this form.

Listing of ROP Application Contents. Check the box for the items included with your application.	
<input checked="" type="checkbox"/> Completed ROP Renewal Application Form (and any AI-001 Forms) (required)	<input type="checkbox"/> Compliance Plan/Schedule of Compliance
<input checked="" type="checkbox"/> Mark-up copy of existing ROP using official version from the AQD website (required)	<input type="checkbox"/> Stack information
<input type="checkbox"/> Copies of all Permit(s) to Install (PTIs) that have not been incorporated into existing ROP (required)	<input type="checkbox"/> Acid Rain Permit Initial/Renewal Application
<input checked="" type="checkbox"/> Criteria Pollutant/Hazardous Air Pollutant (HAP) Potential to Emit Calculations	<input type="checkbox"/> Cross-State Air Pollution Rule (CSAPR) Information
<input type="checkbox"/> MAERS Forms (to report emissions not previously submitted)	<input type="checkbox"/> Confidential Information
<input type="checkbox"/> Copies of all Consent Order/Consent Judgments that have not been incorporated into existing ROP	<input checked="" type="checkbox"/> Paper copy of all documentation provided (required)
<input type="checkbox"/> Compliance Assurance Monitoring (CAM) Plan	<input checked="" type="checkbox"/> Electronic documents provided (optional)
<input type="checkbox"/> Other Plans (e.g., Malfunction Abatement, Fugitive Dust, Operation and Maintenance, etc.)	<input type="checkbox"/> Other, explain: Copies of Emergency Generator specifications

Compliance Statement

This source is in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP. Yes No

This source will continue to be in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP. Yes No

This source will meet in a timely manner applicable requirements that become effective during the permit term. Yes No

The method(s) used to determine compliance for each applicable requirement is/are the method(s) specified in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and all other applicable requirements not currently contained in the existing ROP.

If any of the above are checked No, identify the emission unit(s) or flexible group(s) affected and the specific condition number(s) or applicable requirement for which the source is or will be out of compliance at the time of issuance of the ROP renewal on an AI-001 Form. Provide a compliance plan and schedule of compliance on an AI-001 Form.

Name and Title of the Responsible Official (Print or Type)

Matthew B. Williams Landfill Director

As a Responsible Official, I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.


Signature of Responsible Official

11/7/22
Date

PART C: SOURCE REQUIREMENT INFORMATION

Answer the questions below for specific requirements or programs to which the source may be subject.

C1.	Actual emissions and associated data from all emission units with applicable requirements (including those identified in the existing ROP, Permits to Install and other equipment that have not yet been incorporated into the ROP) are required to be reported in MAERS. Are there any emissions and associated data that have not been reported in MAERS for the most recent emissions reporting year? If Yes , identify the emission unit(s) that was/were not reported in MAERS on an AI-001 Form. Applicable MAERS form(s) for unreported emission units must be included with this application.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C2.	Is this source subject to the federal regulations on ozone-depleting substances? (40 CFR Part 82)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C3.	Is this source subject to the federal Chemical Accident Prevention Provisions? (Section 112(r) of the Clean Air Act Amendments, 40 CFR Part 68) If Yes , a Risk Management Plan (RMP) and periodic updates must be submitted to the USEPA. Has an updated RMP been submitted to the USEPA?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C4.	Has this stationary source added or modified equipment since the last ROP renewal that changes the potential to emit (PTE) for criteria pollutant (CO, NO _x , PM ₁₀ , PM _{2.5} , SO ₂ , VOC, lead) emissions? If Yes , include potential emission calculations (or the PTI and/or ROP revision application numbers, or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. If No , criteria pollutant potential emission calculations do not need to be included.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C5.	Has this stationary source added or modified equipment since the last ROP renewal that changes the PTE for hazardous air pollutants (HAPs) regulated by Section 112 of the federal Clean Air Act? If Yes , include potential emission calculations (or the PTI and/or ROP revision application numbers or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. Fugitive emissions must be included in HAP emission calculations. If No , HAP potential emission calculations do not need to be included.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C6.	Are any emission units subject to the Cross-State Air Pollution Rule (CSAPR)? If Yes , identify the specific emission unit(s) subject to CSAPR on an AI-001 Form.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C7.	Are any emission units subject to the federal Acid Rain Program? If Yes , identify the specific emission unit(s) subject to the federal Acid Rain Program on an AI-001 Form. Is an Acid Rain Permit Renewal Application included with this application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C8.	Are any emission units identified in the existing ROP subject to compliance assurance monitoring (CAM)? If Yes , identify the specific emission unit(s) subject to CAM on an AI-001 Form. If a CAM plan has not been previously submitted to EGLE, one must be included with the ROP renewal application on an AI-001 Form. If the CAM Plan has been updated, include an updated copy. Is a CAM plan included with this application? If a CAM Plan is included, check the type of proposed monitoring included in the Plan: 1. Monitoring proposed by the source based on performance of the control device, or 2. Presumptively Acceptable Monitoring, if eligible	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/>
C9.	Does the source have any plans such as a malfunction abatement plan, fugitive dust plan, operation/maintenance plan, or any other monitoring plan that is referenced in an existing ROP, Permit to Install requirement, or any other applicable requirement? If Yes , then a copy must be submitted as part of the ROP renewal application.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C10.	Are there any specific requirements that the source proposes to be identified in the ROP as non-applicable? If Yes , then a description of the requirement and justification must be submitted as part of the ROP renewal application on an AI-001 Form.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/>	Check here if an AI-001 Form is attached to provide more information for Part C. Enter AI-001 Form ID: AI-Part-C4	

PART D: PERMIT TO INSTALL (PTI) EXEMPT EMISSION UNIT INFORMATION

Review all emission units at the source and answer the question below.

D1. Does the source have any emission units that do not appear in the existing ROP but are required to be listed in the ROP application under R 336.1212(4) (Rule 212(4)) of the Michigan Air Pollution Control Rules? If Yes, identify the emission units in the table below. Yes No

If No, go to Part E.

Note: Emission units that are subject to process specific emission limitations or standards, even if identified in Rule 212, must be captured in either Part G or H of this application form. Identical emission units may be grouped (e.g. PTI exempt Storage Tanks).

Emission Unit ID	Emission Unit Description	Rule 212(4) Citation [e.g. Rule 212(4)(c)]	Rule 201 Exemption Rule Citation [e.g. Rule 282(2)(b)(i)]
Septage Building Boiler	Check GHG for fuel. 0.1 mmbtu/hour capacity	212(4)(c)	282(2)(b)(i)
Scale House/Office Heater	Natural Gas Heater – 0.1 mmbtu/hour capacity	212(4)(c)	282(2)(b)(i)
Shop Comfort Heater - Propane	Propane heater < 50 mmbtu/hr	212(4)(c)	282(2)(b)(i)
Shop Hot Water Heater	Propane-fueled hot water heater 0.04 mmbtu/hr	212(4)(c)	282(2)(b)(i)
Leachate Building Heaters	Check GHG for fuel. UH1&2: 0.135 mmbtu/hr, UH4,5,6&7: 0.26 mmbtu/hr	212(4)(c)	282(2)(b)(i)
Pretreatment Building	Check GHG for fuel. UH3: 0.3 mmbtu/hr	212(4)(c)	282(2)(b)(i)
Leachate Storage Tank	100,000 gallon aboveground leachate storage tank	212(3)(f)	285(2)(aa)
Propane Storage Tank	500 gallon propane tank (outside shop building)	212(4)(d)	284(2)(b)
Used Oil Tank	250 gallon used oil tank in shop	212(4)(d)	284(2)(i)
Grinder	Grinder equipment in shop	212(4)(e)	285(2)(l)(vi)
Shop Comfort Heater – Used Oil	175,000 btu/hour used oil furnace – combusts oil generated from on-site equipment	212(4)(c)	282(2)(b)(iv)

Comments:

Check here if an AI-001 Form is attached to provide more information for Part D. Enter AI-001 Form ID:

PART E: EXISTING ROP INFORMATION

Review all emission units and applicable requirements (including any source wide requirements) in the existing ROP and answer the questions below as they pertain to all emission units and all applicable requirements in the existing ROP.

<p>E1. Does the source propose to make any additions, changes or deletions to terms, conditions and underlying applicable requirements as they appear in the existing ROP? If <u>Yes</u>, identify changes and additions on Part F, Part G and/or Part H.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>E2. For each emission unit(s) identified in the existing ROP, <u>all</u> stacks with applicable requirements are to be reported in MAERS. Are there any stacks with applicable requirements for emission unit(s) identified in the existing ROP that were <u>not</u> reported in the most recent MAERS reporting year? If <u>Yes</u>, identify the stack(s) that was/were not reported on applicable MAERS form(s).</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>E3. Have any emission units identified in the existing ROP been modified or reconstructed that required a PTI? If <u>Yes</u>, complete Part F with the appropriate information.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>E4. Have any emission units identified in the existing ROP been dismantled? If <u>Yes</u>, identify the emission unit(s) and the dismantle date in the comment area below or on an AI-001 Form.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>Comments:</p> <p>In response to E1 - the facility was incorrectly categorized as being subject to the Landfill NSPS in the previous renewal application (40 CFR 60 Subpart XXX) since the prior air consultant thought that construction of a landfill cell permitted prior to July 17, 2014 triggered XXX applicability. Since that is not the case, the landfill is actually subject to 40 CFR 62 Subpart OOO (Federal Plan), promulgated May 31, 2021 since construction of the last expansion increasing permitted airspace was initiated prior to July 17, 2014. The landfill is considered a "Legacy Controlled Landfill" under the Federal Plan. Additionally, the Landfill NESHAP (40 CFR 63 Subpart AAAA) was revised on March 26, 2020. This regulation became effective on September 27, 2021 and replaces all monitoring, operational and compliance standards of the Federal Plan, and some recordkeeping and reporting requirements.</p> <p>EGLE has provided AQD template tables for both the revised Landfill NESHAP and the Federal Plan. These templates have been marked up to include only those provisions that continue to be applicable to Smiths Creek Landfill after September 27, 2021. The templates were also marked up to include the solar flares, which are not typical control devices and were not originally included in the templates. The existing template table for 40 CFR 60 Subpart WWW that is in the current ROP should be removed.</p>	
<p><input type="checkbox"/> Check here if an AI-001 Form is attached to provide more information for Part E. Enter AI-001 Form ID:</p>	

PART F: PERMIT TO INSTALL (PTI) INFORMATION

Review all emission units and applicable requirements at the source and answer the following questions as they pertain to all emission units with PTIs. Any PTI(s) identified below must be attached to the application.

<p>F1. Has the source obtained any PTIs where the applicable requirements from the PTI have not been incorporated into the existing ROP? If <u>Yes</u>, complete the following table. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If <u>No</u>, go to Part G.</p>			
Permit to Install Number	Emission Units/Flexible Group ID(s)	Description (Include Process Equipment, Control Devices and Monitoring Devices)	Date Emission Unit was Installed/ Modified/ Reconstructed
N/A – exempt per 336.128(aa)	EUVENTFLARE	One (1) additional solar vent flare was added to the passive GCCS to control LFG emissions from the Cell 7 leachate sump. Notification of off-permit change submitted 9/8/2022.	9/21/2022
<p>F2. Do any of the PTIs listed above change, add, or delete terms/conditions to established emission units in the existing ROP? If <u>Yes</u>, identify the emission unit(s) or flexible group(s) affected in the comments area below or on an AI-001 Form and identify all changes, additions, and deletions in a mark-up of the existing ROP. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>			
<p>F3. Do any of the PTIs listed above identify new emission units that need to be incorporated into the ROP? If <u>Yes</u>, submit the PTIs as part of the ROP renewal application on an AI-001 Form, and include the new emission unit(s) or flexible group(s) in the mark-up of the existing ROP. N/A – no PTI was required since this type of small flare is exempt. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>			
<p>F4. Are there any stacks with applicable requirements for emission unit(s) identified in the PTIs listed above that were <u>not</u> reported in MAERS for the most recent emissions reporting year? If <u>Yes</u>, identify the stack(s) that were not reported on the applicable MAERS form(s). <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>			
<p>F5. Are there any proposed administrative changes to any of the emission unit names, descriptions or control devices in the PTIs listed above for any emission units not already incorporated into the ROP? If <u>Yes</u>, describe the changes on an AI-001 Form. See permit Mark-up. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>			
<p>Comments: The solar flare is equipped with a small blower (unlike the other solar flares) to “actively” extract LFG rather than combust it passively.</p>			
<p><input type="checkbox"/> Check here if an AI-001 Form is attached to provide more information for Part F. Enter AI-001 Form ID:</p>			

PART G: EMISSION UNITS MEETING THE CRITERIA OF RULES 281(2)(h), 285(2)(r)(iv), 287(2)(c), OR 290

Review all emission units and applicable requirements at the source and answer the following questions.

G1. Does the source have any new and/or existing emission units which do not already appear in the existing ROP and which meet the criteria of Rules 281(2)(h), 285(2)(r)(iv), 287(2)(c), or 290.
 If Yes, identify the emission units in the table below. If No, go to Part H. Yes No
Note: If several emission units were installed under the same rule above, provide a description of each and an installation/modification/reconstruction date for each.

Origin of Applicable Requirements	Emission Unit Description – <i>Provide Emission Unit ID and a description of Process Equipment, Control Devices and Monitoring Devices</i>	Date Emission Unit was Installed/Modified/Reconstructed
<input type="checkbox"/> Rule 281(2)(h) or 285(2)(r)(iv) cleaning operation		
<input type="checkbox"/> Rule 287(2)(c) surface coating line		
<input type="checkbox"/> Rule 290 process with limited emissions		

Comments:

Check here if an AI-001 Form is attached to provide more information for Part G. Enter AI-001 Form ID:

PART H: REQUIREMENTS FOR ADDITION OR CHANGE

Complete this part of the application form for all proposed additions, changes or deletions to the existing ROP. This includes state or federal regulations that the source is subject to and that must be incorporated into the ROP or other proposed changes to the existing ROP. **Do not include additions or changes that have already been identified in Parts F or G of this application form.** If additional space is needed copy and complete an additional Part H.

Complete a separate Part H for each emission unit with proposed additions and/or changes.

H1. Are there changes that need to be incorporated into the ROP that have not been identified in Parts F and G? If <u>Yes</u> , answer the questions below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H2. Are there any proposed administrative changes to any of the existing emission unit names, descriptions or control devices in the ROP? If <u>Yes</u> , describe the changes in questions H8 – H16 below and in the affected Emission Unit Table(s) in the mark-up of the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H3. Does the source propose to add a new emission unit or flexible group to the ROP not previously identified in Parts F or G? If <u>Yes</u> , identify and describe the emission unit name, process description, control device(s), monitoring device(s) and applicable requirements in questions H8 – H16 below and in a new Emission Unit Table in the mark-up of the ROP. See instructions on how to incorporate a new emission unit/flexible group into the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H4. Does the source propose to add new state or federal regulations to the existing ROP? If <u>Yes</u> , on an AI-001 Form, identify each emission unit/flexible group that the new regulation applies to and identify <u>each</u> state or federal regulation that should be added. Also, describe the new requirements in questions H8 – H16 below and add the specific requirements to existing emission units/flexible groups in the mark-up of the ROP, create a new Emission Unit/Flexible Group Table, or add an AQD template table for the specific state or federal requirement. EGLE has provided AQD template tables for both the revised Landfill NESHAP (40 CFR 63 Subpart AAAA) and the Federal Plan (40 CFR 62 Subpart OOO). These templates have been marked up to include only those provisions that continue to be applicable to Smiths Creek Landfill after September 27, 2021.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
H5. Has a Consent Order/Consent Judgment (CO/CJ) been issued where the requirements were not incorporated into the existing ROP? If <u>Yes</u> , list the CO/CJ number(s) below and add or change the conditions and underlying applicable requirements in the appropriate Emission Unit/Flexible Group Tables in the mark-up of the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H6. Does the source propose to add, change and/or delete source-wide requirements? If <u>Yes</u> , identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. The existing AQD template table for 40 CFR 60 Subpart WWW that is in the current ROP should be removed since the landfill is now subject to the provisions of the Federal Plan (40 CFR 62 Subpart OOO). Portions of the Federal Plan regulations (monitoring, operational standards and compliance provisions) transitioned to the Landfill NESHAP on September 27, 2021.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
H7. Are you proposing to streamline any requirements? If <u>Yes</u> , identify the streamlined and subsumed requirements and the EU ID, and provide a justification for streamlining the applicable requirement below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

<p>H8. Does the source propose to add, change and/or delete emission limit requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H9. Does the source propose to add, change and/or delete material limit requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H10. Does the source propose to add, change and/or delete process/operational restriction requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H11. Does the source propose to add, change and/or delete design/equipment parameter requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H12. Does the source propose to add, change and/or delete testing/sampling requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p> <p>The 7th solar vent flare will need to have an initial performance test conducted within 180 days of startup. Testing will be conducted under the provisions of the Federal Plan and Landfill NESHAP (open flare requirements modified for a passive solar vent flare).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>H13. Does the source propose to add, change and/or delete monitoring/recordkeeping requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p> <p>Monitoring and some recordkeeping provisions will be conducted under the revised Landfill NESHAP and Federal Plan instead of under the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>H14. Does the source propose to add, change and/or delete reporting requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p> <p>Reporting provisions will be conducted under the revised Landfill NESHAP and Federal Plan instead of under the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

H15. Does the source propose to add, change and/or delete **stack/vent restrictions**? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H16. Does the source propose to add, change and/or delete any **other** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H17. Does the source propose to add terms and conditions for an alternative operating scenario or intra-facility trading of emissions? If Yes, identify the proposed conditions in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No



Check here if an AI-001 Form is attached to provide more information for Part H. Enter AI-001 Form ID:



RENEWABLE OPERATING PERMIT APPLICATION

AI-001: ADDITIONAL INFORMATION

This information is required by Article II, Chapter 1, part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.

SRN: N6207

Section Number (if applicable): 1

1. Additional Information ID
AI- AI-Part-C1, C2, C4, C5, C10, F5, H4

Additional Information

2. Is This Information Confidential? Yes No

3. Narrative

Question C1, C4, C5 & F5: A 7th solar flare was installed at the site in September, 2022 and was therefore not included in the most recent MAERS report for Calendar Year 2021. PTE calculations (criteria pollutants and HAPs) for this 7th flare are provided in this renewal application. The permit will be marked up (as appropriate) to include this new passive control device in accordance with Question F5 of this form.

Question C2: The site accepts old refrigerators from residential customers. Once 10 – 15 have been accumulated, a third party licensed freon removal contractor comes to the site to remove the freon in the refrigerators. Since this activity takes place on the landfill property, 40 CFR 82 rules are applicable.

Question C10: The 100,000 gallon leachate storage tank (above ground) is not subject to the provisions of 40 CFR 60 Subpart Kb - Volatile Organic Liquid Storage Vessels, even though landfill leachate does contain small quantities of compounds that are volatile and/or hazardous air pollutants.

Subpart Kb has three applicability thresholds. Tanks with a capacity of less than 19,815 gallons (75 m3) are not subject to the NSPS. Tanks larger than 19,815 gallons but less than 39,894 gallons (151 m3) are not affected if the VOC vapor pressure is less than 15.0 kPa (112.5 mmHg). Tanks larger than 39,894 gallons are affected if the VOC vapor pressure is greater than 3.5 kPa (26.26 mm Hg).

The existing leachate storage tank at Smiths Creek Landfill is 100,000 gallons. The leachate VOC vapor pressure was calculated and demonstrates that NSPS Subpart Kb does not apply since vapor pressure is below the 3.5 kPa limit based on tank size. The vapor pressure of leachate that is stored in the tank is below 3.5 kPa, based on concentrations of VOCs that are present in the leachate (using site-specific leachate analytical data).

Question H4: The landfill is became subject to a new applicable federal regulation - 40 CFR 62 Subpart OOO (Federal Plan), promulgated May 31, 2021, since the landfill did not receive an expansion in volume after July 14, 2017. The landfill is considered a "Legacy Controlled Landfill" under the Federal Plan. Additionally, the Landfill NESHAP (40 CFR 63 Subpart AAAA) was revised on March 26, 2020. This regulation became effective on September 27, 2021 and replaces all monitoring, operational and compliance standards of the Federal Plan, and some recordkeeping and reporting requirements.

EGLE has provided AQD template tables for both the revised Landfill NESHAP and the Federal Plan. These templates have been marked up to include only those provisions that continue to be applicable to Smiths Creek Landfill after September 27, 2021 AND to include the site's seven solar flares. The existing template table for 40 CFR 60 Subpart WWW that is in the current ROP should be removed.

This is the template for 40 CFR Part 63, Subpart AAAA - National Emission Standards for Hazardous Air Pollutants (NESHAP) for a Municipal Solid Waste (MSW) landfill that has accepted waste since November 8, 1987, or has additional capacity for waste deposition and meets any one of the following three criteria: is a major source as defined in 40 CFR 63.2, is collocated with a major source as defined in 40 CFR 63.2, is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m³) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to 40 CFR 63.1959.

This template is meant to be inserted into the ROP shell document along with the associated parts and appendices that are specific to this template.

Included in this template is Part D, Flexible Group Special Conditions including the Flexible Group Summary Table.

D. FLEXIBLE GROUP SPECIAL CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FGLANDFILL-AAAA	This flexible group represents the general MSW landfill with a required collection and control system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EULANDFILL EUACTIVECOLL EUTREATMENTSYS EUOPENFLARE EUVENTFLARE
FGACTIVECOLL-AAAA & FGPASSIVECOLL-AAAA	This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment, and the passive gas collection system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUACTIVECOLL & EU-PASSIVECOLL
FGTREATMENTSYS-AAAA NOTE: These requirements should be included in Section 2 of the ROP (for Blue Water Renewables, LLC) since they own and operate the Treatment System and associated RICE engines.	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUTREATMENTSYS
FGOPENFLARE-AAAA	Open (non-enclosed) flare is an open combustor without enclosure or shroud. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUOPENFLARE
FGVENTFLARE-AAAA	This flexible group contains 40 CFR Part 63, Subpart AAAA requirements as they pertain to a passive gas collection system. Self-igniting (solar powered) flares are open combustors and are not enclosed or shrouded.	EUVENTFLARE

**FGLANDFILL-AAAA
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

This flexible group represents the general MSW landfill with a required active and passive collection and control system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Emission Units: EULANDFILL, EUACTIVECOLL, EUTREATMENTSYS, EUOPENFLARE & EUVENTFLARE

POLLUTION CONTROL EQUIPMENT

Most of the landfill gas is collected and combusted in an open flare or combusted in the internal combustion engines to generate electricity.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Methane	Less than 500 ppm above background level	Calendar Quarter	Surface of Landfill	SC V.1 SC VI.1	40 CFR 63.1958(d)(1)

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. At all times, the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 63.1955(c))**
2. During periods of startup, shutdown, and malfunction (SSM), the permittee must comply with the work practices specified in 40 CFR 63.1958(e)(1). **(40 CFR 63.1960(e)(2))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee must install a collection and control system that captures the landfill gas generated within the landfill according to the requirements in 40 CFR 63.1959(b)(2)(ii) and 40 CFR 63.1959(b)(2)(iii). **(40 CFR 63.1959(b)(2))**
2. The permittee must route all the collected landfill gas to at least one of the following:
 - a. An open (non-enclosed) flare designed in accordance with 40 CFR 63.11(b) except as noted in 40 CFR 63.1959(e). **(40 CFR 63.1959(b)(2)(iii)(A))**
 - b. A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight-percent or reduce the outlet NMOC concentration to less than 20 ppmv on dry basis, as hexane at 3% oxygen. **(40 CFR 63.1959(b)(2)(iii)(B))**
 - c. A treatment system that processes the collected gas for subsequent sale or beneficial use. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either 40 CFR 63.1959(b)(2)(iii)(A) or (B). **(40 CFR 63.1959(b)(2)(iii)(C))**

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30-meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis. **(40 CFR 63.1960(c)(1))**
2. The permittee must conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan must be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30-meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing. **(40 CFR 63.1958(d)(1))**
 - a. The permittee must conduct testing using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 40 CFR 63.1960(d). **(40 CFR 63.1958(d)(2)(i), 40 CFR 63.1960(c)(1))**
 - b. The background concentration must be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells. **(40 CFR 63.1960(c)(2))**
 - c. Surface emission monitoring must be performed in accordance with 40 CFR Part 60, Appendix A-7, Method 21, Section 8.3.1, except that the probe inlet must be placed within 5 to 10 centimeters of the ground. Monitoring must be performed during typical meteorological conditions. **(40 CFR 63.1960(c)(3))**
 - d. The permittee must conduct surface testing at all cover penetrations and monitor any cover penetrations that are within an area of the landfill where waste has been placed and a gas collection system is required. **(40 CFR 63.1958(d)(2)(ii))**
 - e. The permittee must determine the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places. **(40 CFR 63.1958(d)(2)(iii))**
3. The permittee must document any reading of 500 ppm or more above background at any location as a monitored exceedance. As long as the following specified actions are taken, the exceedance is not a violation of the operational requirements of 40 CFR 63.1958(d). **(40 CFR 63.1960(c)(4))**
 - a. The location of each monitored exceedance must be marked, and the location recorded using an instrument with an accuracy of 4 meters with coordinates in decimal degrees and five decimal places. **(40 CFR 63.1960(c)(4)(i))**
 - b. Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance must be made and the location must be re-monitored within 10 calendar days of detecting the exceedance. **(40 CFR 63.1960(c)(4)(ii))**
 - c. If the re-monitoring of the location shows a second exceedance, additional corrective action must be taken and the location must be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in SC V.3.e must be taken, and no further monitoring of that location is required until the action specified in SC V.3.e has been taken. **(40 CFR 63.1960(c)(4)(iii))**
 - d. Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in 40 CFR 63.1960(c)(4)(ii) or (iii) must be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less than 500 ppm above backgrounds, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in SC V.3.c or SC V.3.e must be taken. **(40 CFR 63.1960(c)(4)(iv))**

- e. For any location where monitored methane concentration equals or exceeds 500 ppm above backgrounds three times within a quarterly period, a new well or other collection device must be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the Department for approval. **(40 CFR 63.1960(c)(4)(v))**
4. The permittee must comply with instrumentation specifications and procedures in 40 CFR 63.1960(d) for surface emission monitoring devices: **(40 CFR 63.1960(d))**
 - a. The portable analyzer must meet the instrument specifications provided in 40 CFR Part 60, Appendix A-7, Method 21, except that "methane" must replace all references to VOC. **(40 CFR 63.1960(d)(1))**
 - b. The calibration gas must be methane, diluted to a nominal concentration of 500 ppm in air. **(40 CFR 63.1960(d)(2))**
 - c. To meet the performance evaluation requirements in 40 CFR Part 60, Appendix A-7, Method 21, the instrument evaluation procedures of 40 CFR Part 60, Appendix A-7, Method 21 must be used. **(40 CFR 63.1960(d)(3))**
 - d. The calibration procedures provided in 40 CFR Part 60, Appendix A-7, Method 21 must be followed immediately before commencing a surface monitoring survey. **(40 CFR 63.1960(d)(4))**
5. Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring. **(40 CFR 63.1961(f))**

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep records of the surface methane monitoring including, at a minimum, the following information:
 - a. The route traversed including any areas not monitored because of unsafe conditions (i.e., truck traffic, construction, active face, dangerous areas, etc.) and areas included where visual observations indicate elevated levels of landfill gas. **(40 CFR 63.1960(c)(1))**
 - b. The location(s) and concentrations of the methane readings and noting any reading of 500 ppm or more above background. **(40 CFR 63.1960(c)(4))**
 - c. The meteorological conditions the day of the testing including wind speed, wind direction, and temperature. **(R 336.1213(3))**

The permittee must keep all records on file in a format acceptable to the appropriate AQD District Supervisor and make them available upon request. **(R 336.1213(3), 40 CFR 63.1960(c))**

2. The permittee must implement a program to monitor, on a monthly basis, for cover integrity and implement cover repairs as necessary. Records of the cover integrity and any cover repairs must be kept on file in a format acceptable to the appropriate AQD District Supervisor and made available upon request. **(R 336.1213(3), 40 CFR 63.1960(c)(5))**
3. The permittee must keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report that triggered 40 CFR 63.1959(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable. The permittee must keep all records on file in a format acceptable to the appropriate AQD District Supervisor and make them available upon request. **(R 336.1213(3), 40 CFR 63.1983(a))**
4. If adding liquids other than leachate in a controlled fashion to the waste mass and do not comply with the bioreactor requirements in 40 CFR 63.1947, 40 CFR 63.1955(b), and 40 CFR 63.1982(a) and (b), the permittee must keep records of calculations showing that the percent moisture by weight expected in the waste mass to

which liquid is added is less than 40 percent. The calculation must consider the waste mass, moisture content of the incoming waste, mass of water added to the waste including leachate recirculation and other liquids addition and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balances calculations can be used. The permittee must document the calculations and the basis of any assumptions. Keep the record of the calculations until the permittee ceases liquids addition. **(40 CFR 63.1982(c))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee must submit reports which must be postmarked or received by the appropriate AQD District Office by March 15 for reporting period January 1 to December 31. The reports must include the location of each exceedance of the 500 ppm methane concentrations as provided in 40 CFR 63.1958(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month. The reports must also include information on all deviations that occurred during the 6-month reporting period. **(40 CFR 63.1961(f), 40 CFR 63.1981(h)(5))**
5. The permittee of a controlled landfill must submit an equipment removal report to the Department 30 days prior to removal or cessation of operation of the control equipment. **(40 CFR 63.1981(g))**
 - a. The equipment removal report must contain all the following items:
 - i. A copy of the closure report submitted in accordance with 40 CFR 63.1981(f). **(40 CFR 63.1981(g)(1)(i))**
 - ii. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired, or information that demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flows. In the equipment removal report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the USEPA's Central Data Exchange (CDX). **(40 CFR 63.1981(g)(1)(ii))**
 - iii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 Mg or greater of NMOC per year. If the NMOC emission rate reports have been previously submitted to the USEPA's CDX, a statement that the NMOC emission rate reports have been submitted electronically and the dates that the reports were submitted to the USEPA's CDX may be submitted in the equipment removal report in lieu of the NMOC emission rate reports. **(40 CFR 63.1981(g)(1)(iii))**
 - b. The Department may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 63.1957(b) have been met. **(40 CFR 63.1981(g)(2))**
6. The permittee of a controlled landfill must submit a closure report to the Department within 30 days of waste acceptance cessation. The Department may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Department, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 63.9(b). **(40 CFR 63.1981(f))**
7. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air>)

[emissions/electronic-reporting-tool-ert](#)). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(l)(1)(i))**

- b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(l)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The NMOC emission rate reports, semiannual reports, and bioreactor 40-percent moisture reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(l)(2))**
8. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENTS

1. If the permittee has submitted a design plan under 40 CFR 63.1981(d), the permittee must submit a revised design plan to the Department for approval as follows:
 - a. At least 90 days before expanding operations to an area not covered by the previously approved design plan. **(40 CFR 63.1981(e)(1))**
 - b. Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted under 40 CFR 63.1981(d). **(40 CFR 63.1981(e)(2))**
2. The collection and control system may be capped, removed, or decommissioned if the following criteria are met:
 - a. The landfill is a closed landfill (as defined in 40 CFR 63.1990). A closure report must be submitted to the Department as provided in 40 CFR 63.1981(f). **(40 CFR 63.1957(b)(1))**
 - b. The gas collection and control system has been in operation a minimum of 15 years or the permittee demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flow. **(40 CFR 63.1957(b)(2))**
 - c. Following the procedures specified in 40 CFR 63.1959(c), the calculated NMOC gas produced by the landfill must be less than 50 Mg/yr on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart. **(40 CFR 63.1957(b)(3))**
3. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

<p>FGACTIVECOLL-AAAA & FGPASSIVECOLL-AAAA FLEXIBLE GROUP CONDITIONS</p>
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DESCRIPTION

This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment. This group also includes the passive collection system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Emission Unit: EUACTIVECOLL & EUPASSIVECOLL

POLLUTION CONTROL EQUIPMENT

One (1) open flare and one self-igniting solar flare serving the active portion of the landfill and six (6) self-igniting solar flares serving the closed portion of the landfill. The solar flares were approved by the United States Environmental Protection Agency.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee must operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:
 - a. 5 years or more if active; or **(40 CFR 63.1958(a)(1))**
 - b. 2 years or more if closed or at final grade. **(40 CFR 63.1958(a)(2))**

2. The permittee must operate the collection system with negative pressure at each wellhead except under the following conditions:
 - a. A fire or increased well temperature. **(40 CFR 63.1958(b)(1))**
 - b. Use of a geo-membrane or synthetic cover. The permittee must develop acceptable pressure limits in the design plan. **(40 CFR 63.1958(b)(2))**
 - c. A decommissioned well. A well may experience a static positive pressure after shut-down to accommodate for declining flows. **(40 CFR 63.1958(b)(3))**

3. The permittee must operate each interior wellhead in the collection system under the following conditions:
 - a. Operate each interior wellhead in the collection system with a landfill gas temperature less than 62.8°C (145°F). **(40 CFR 63.1958(c)(1))**
 - b. A higher operating temperature value may be established at a particular well. A higher operating value demonstration must be submitted to the Department for approval and must include supporting data that the elevated parameter does not cause fires nor significantly inhibit anaerobic decomposition by killing methanogens. **(40 CFR 63.1958(c)(2))**

4. At all times, the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 63.1955(c))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. Except as described below, the permittee must operate the system in accordance with 40 CFR 63.1955(c) such that all collected gases are vented to a control system designed and operated in compliance with 40 CFR 63.1959(b)(2)(iii). **(40 CFR 63.1958(e)(1))**
 - a. In the event the collection or control system is not operating, the gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour of the collection or control system not operating. **(40 CFR 63.1958(e)(1)(i))**
 - b. Efforts by the permittee to repair the collection or control system must be initiated and completed in a manner such that downtime is kept to a minimum, and the collection and control system must be returned to operation. **(40 CFR 63.1958(e)(1)(ii))**
 - c. For the passive gas collection system, as approved by U.S. EPA, the requirement to close valves within one hour in the event of control device malfunction is satisfied by following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 63.1958(e)(1), 40 CFR 63.1981(d)(6), 40 CFR 63.1955(a))**
 - d. For the passive gas collection system, as approved by U.S. EPA, the requirement to operate the vent flare at all times when the collected gas is routed to it is satisfied by the continuous ignition system and following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 63.1958(e)(1), 40 CFR 63.1981(d)(6), 40 CFR 63.1955(a))**
2. The permittee must install an active collection system that meets the following requirements:
 - a. Designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment. **(40 CFR 63.1959(b)(2)(ii)(B)(1))**
 - b. Each well must be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of 5 years or more if active; or 2 years or more if closed or at final grade. **(40 CFR 63.1960(b), 40 CFR 63.1959(b)(2)(ii)(B)(2))**
 - c. Collects gas at a sufficient extraction rate. **(40 CFR 63.1959(b)(2)(ii)(B)(3))**
 - d. Designed to minimize off-site migration of subsurface gas. **(40 CFR 63.1959(b)(2)(ii)(B)(4))**
3. The permittee must install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead. **(40 CFR 63.1961(a))**
4. The permittee must demonstrate compliance with the operational standard for temperature in 40 CFR 63.1958(c)(1) by monitoring the temperature of the landfill gas on a monthly basis as provided in 40 CFR 63.1960(a)(4). The temperature measuring device must be calibrated annually using the procedure in Section 10.3 of USEPA Method 2 of Appendix A-1 to Part 60 of this chapter. **(40 CFR 63.1961(a)(4))**
5. The permittee must site active gas collection devices as required in 40 CFR 63.1962 and must control all gas producing areas, except as provided below.
 - a. Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under 40 CFR 63.1983(d). **(40 CFR 63.1962(a)(3)(i))**
 - b. Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared

to the NMOC emissions estimate for the entire landfill. Emissions from each section must be computed using the equation in Appendix 7. **(40 CFR 63.1962(a)(3)(ii))**

6. A **passive** gas collection system shall comply with the following:
 - a. The provisions specified in 40 CFR 60.752(b)(2)(ii)(A)(1), (2), and (4). **(40 CFR 60.752(b)(2)(ii)(B)(1), 40 CFR 63.1955(a))**
 - b. The U.S. EPA Final Control Plan. **(40 CFR 60.752(b)(2)(i)(C), 40 CFR 63.1955(c), U.S. EPA approved Final Control Plan)**

See Appendix 7

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 40 CFR 63.1959(b)(2)(ii)(B)(3), the permittee must measure, on a monthly basis, the gauge pressure in the gas collection header at each individual well as provided in 40 CFR 63.1960(a)(3) and 40 CFR 63.1961(a)(1). Any attempted corrective measure must not cause exceedances of other operational or performance standards.
 - a. If positive pressure exists, action must be initiated to correct the exceedance within five calendar days. **(40 CFR 63.1960(a)(3)(i))**
 - c. If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement of positive pressure, the permittee must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after positive pressure was first measured. **(40 CFR 63.1960(a)(3)(i)(A))**
 - d. If corrective actions cannot be fully implemented within 60 days following the positive pressure measurement for which the root cause analysis was required, the permittee must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the positive pressure measurement. **(40 CFR 63.1960(a)(3)(i)(B))**
 - d. If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the permittee must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Department as soon as practicable but no later than 75 days after the first measurement of positive pressure or above, according to 40 CFR 63.1981(j). **(40 CFR 63.1960(a)(3)(i)(C))**
2. The permittee must monitor each well monthly for temperature for the purpose of identifying whether excess air infiltration exists as provided in 40 CFR 63.1958(c)(1) and 40 CFR 63.1961(a)(4). If a well exceeds the operating parameter for temperature, the following corrective actions must be taken:
 - a. Action must be initiated to correct the exceedance within 5 calendar days. Any attempted corrective measure must not cause exceedances of other operational or performance standards. **(40 CFR 63.1960(a)(4)(i))**
 - b. If a landfill gas temperature less than 62.8°C (145°F) cannot be achieved within 15 calendar days of the first measurement of landfill gas temperature greater than 62.8°C (145°F), the permittee must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after a landfill gas temperature greater than 62.8°C (145°F) was first measured. **(40 CFR 63.1960(a)(4)(i)(A))**
 - c. If corrective actions cannot be fully implemented within 60 days following the temperature measurement for which the root cause analysis was required, the permittee must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 62.8°C (145°F). **(40 CFR 63.1960(a)(4)(i)(B))**

- d. If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the permittee must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Department as soon as practicable but no later than 75 days after the first measurement of temperature monitoring value of 62.8°C (145°F) or above, according to 40 CFR 63.1981(h)(7) and 40 CFR 63.1981(j). **(40 CFR 63.1960(a)(4)(i)(C))**
- e. If a landfill gas temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7°C (170°F) and the carbon monoxide concentration measured according to the procedures in 40 CFR 63.1961(a)(5)(vi) is greater than or equal to 1,000 ppmv, the corrective action(s) for the wellhead temperature standard 62.8°C (145°F) must be completed within 15 days. **(40 CFR 63.1960(a)(4)(i)(D))**
3. The permittee must monitor, on a monthly basis, the nitrogen or oxygen concentration in the landfill gas using the procedures in 40 CFR 63.1961(a)(2)(i) or (ii). **(40 CFR 63.1961(a)(2))**
4. Unless a higher operating temperature value has been approved by the Department under this subpart or under 40 CFR Part 60, Subpart WWW; 40 CFR Part 60, Subpart XXX; or a federal plan or USEPA-approved and effective state plan that implements either 40 CFR Part 60, Subpart Cc or 40 CFR Part 60, Subpart Cf, the permittee must initiate enhanced monitoring at each well with a landfill gas temperature greater than 62.8°C (145°F) as follows:
 - a. Visual observations for subsurface oxidation events (smoke, smoldering ash, damage to well) within the radius of influence of the well. **(40 CFR 63.1961(a)(5)(i))**
 - b. Monitor the oxygen concentration as provided in SC VI.3. **(40 CFR 63.1961(a)(5)(ii))**
 - c. Monitor the temperature of the landfill gas at the wellhead as provided in SC VI.2. **(40 CFR 63.1961(a)(5)(iii))**
 - d. Monitor the landfill gas every 10 vertical feet of the well as provided in SC VI.5. **(40 CFR 63.1961(a)(5)(iv))**
 - e. Monitor the methane concentration with a methane meter using USEPA Method 3C of Appendix A-6 to 40 CFR Part 60, USEPA Method 18 of Appendix A-6 to 40 CFR Part 60, or a portable gas composition analyzer to monitor the methane levels provided that the analyzer is calibrated and the analyzer meets all quality assurance and quality control requirements for USEPA Method 3C or USEPA Method 18. **(40 CFR 63.1961(a)(5)(v))**
 - f. Monitor the carbon monoxide concentrations as follows:
 - i. Collect the sample from the wellhead sampling port in a passivated canister or multi-layer foil gas sampling bag (such as the Cali-5-Bond Bag) and analyze that sample using an approved USEPA Method listed in 40 CFR 60, Appendix A, or an equivalent method with a detection limit of at least 100 ppmv of carbon monoxide in high concentrations of methane; or. **(40 CFR 63.1961(a)(5)(vi)(A))**
 - ii. Collect and analyze the sample from the wellhead using an approved USEPA Method listed in 40 CFR 60, Appendix A to measure carbon monoxide concentrations. **(40 CFR 63.1961(a)(5)(vi)(B))**
 - iii. When sampling directly from the wellhead, sample for 5 minutes plus twice the response time of the analyzer. These values must be recorded. The five 1-minute averages are then averaged to give you the carbon monoxide reading at the wellhead. **(40 CFR 63.1961(a)(5)(vi)(C))**
 - iv. When collecting samples in a passivated canister or multi-layer foil sampling bag, sample for the period of time needed to assure that enough sample is collected to provide five (5) consecutive, 1-minute samples during the analysis of the canister or bag contents, but no less than 5 minutes plus twice the response time of the analyzer. The five (5) consecutive, 1-minute averages are then averaged together to give a carbon monoxide value from the wellhead. **(40 CFR 63.1961(a)(5)(vi)(D))**
 - g. The enhanced monitoring specified in SC VI.4 must begin seven calendar days after the first measurement of landfill gas temperature greater than 62.8°C (145°F). **(40 CFR 63.1961(a)(5)(vii))**
 - h. The enhanced monitoring must be conducted on a weekly basis. If four consecutive weekly carbon monoxide readings are under 100 ppmv, then enhanced monitoring may be decreased to monthly. However, if carbon monoxide readings exceed 100 ppmv again, the landfill must return to weekly monitoring. **(40 CFR 63.1961(a)(5)(viii))**
 - i. The enhanced monitoring specified in SC VI.4 can be stopped once a higher operating value is approved, at which time the monitoring provisions issued with the higher operating value should be followed, or once the

measurement of landfill gas temperature at the wellhead is less than or equal to 62.8°C (145°F). **(40 CFR 63.1961(a)(5)(ix))**

5. For each wellhead with a measurement of landfill gas temperature greater than or equal to 73.9°C (165°F), the permittee shall annually monitor temperature of the landfill gas every 10 vertical feet of the well. This temperature can be monitored either with a removable thermometer or using temporary or permanent thermocouples installed in the well. **(40 CFR 63.1961(a)(6))**
6. The permittee must keep, on a monthly basis, readily accessible records of the following:
 - a. All collection and control system exceedances of the operational standards in 40 CFR 63.1958, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance. **(40 CFR 63.1983(e)(1))**
 - b. The records of each wellhead temperature monitoring value of 62.8°C (145°F) or above. **(40 CFR 63.1983(e)(2)(i))**
 - c. Each permittee required to conduct the enhanced monitoring provisions in 40 CFR 63.1961(a)(5), must also keep records of all enhanced monitoring activities. **(40 CFR 63.1983(e)(2)(ii))**
 - d. The permittee must also keep a record of the email transmission when required to submit the 24-hour high temperature report in 40 CFR 63.1981(k). **(40 CFR 63.1983(e)(2)(iii))**
 - e. For any root cause analysis for which corrective actions are required in 40 CFR 63.1960(a)(3)(i)(A) or (a)(4)(i)(A), keep a record of the root cause analysis conducted, including a description of the recommended corrective action(s) taken, and the date(s) the corrective action(s) were completed. **(40 CFR 63.1983(e)(3))**
 - f. For any root cause analysis for which corrective actions are required in 40 CFR 63.1960(a)(3)(i)(B) or (a)(4)(i)(B), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates. **(40 CFR 63.1983(e)(4))**
 - g. For any root cause analysis for which corrective actions are required in 40 CFR 63.1960(a)(3)(i)(C) or (a)(4)(i)(C), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates, and a copy of any comments or final approval on the corrective action analysis or schedule from the Department. **(40 CFR 63.1983(e)(5))**
7. The permittee must keep up-to-date, readily accessible records for the life of the control equipment of the data listed as follows:
 - a. The maximum expected gas generation flow rate as calculated in 40 CFR 63.1960(a)(1). **(40 CFR 63.1983(b)(1)(i))**
 - b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 63.1962(a)(1) and (2). **(40 CFR 63.1983(b)(1)(ii))**
8. The permittee must record the date, time, and duration of each startup and/or shutdown periods when the affected source was subject to the standard applicable to startup and shutdown. **(40 CFR 63.1983(c)(6))**
9. Where the permittee seeks to demonstrate compliance with the operational standard in 40 CFR 63.1958(e)(1), in the event that an affected unit fails to meet an applicable standard, the permittee shall record the following information:
 - a. The date, time, and duration of each failure and the cause of the events (including unknown cause, if applicable). **(40 CFR 63.1983(c)(7)(i))**
 - b. For each failure to meet an applicable standard; record and retain a list of the affected sources or equipment. **(40 CFR 63.1983(c)(7)(ii))**

- c. Record actions taken to minimize emissions in accordance with the general duty of 40 CFR 63.1955(c) and any corrective actions taken to return the affected unit to its normal or usual manner of operation. **(40 CFR 63.1983(c)(7)(iii))**
10. The permittee must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector; and the installation date and location of all newly installed collectors as specified under 40 CFR 63.1960(b). **(40 CFR 63.1983(d), 40 CFR 63.1983(d)(1))**
11. The permittee must maintain the following information:
 - a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion. **(40 CFR 63.1981(i)(1))**
 - b. The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. **(40 CFR 63.1981(i)(3))**
 - c. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. **(40 CFR 63.1981(i)(4))**
 - d. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. **(40 CFR 63.1981(i)(5))**
 - e. The provisions for the control of off-site migration. **(40 CFR 63.1981(i)(6))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee using an active collection system designed in accordance with 40 CFR 63.1959(b)(2)(ii) must submit to the Department semiannual reports. The semiannual reports must include the following information:
 - a. Number of times the applicable parameters monitored under 40 CFR 63.1958(b), (c) and (d) were exceeded and when the gas collection and control system was not operating under 40 CFR 63.1958(e), including periods of SSM. For each instance, report the date, time, and duration of each exceedance. **(40 CFR 63.1981(h)(1))**
 - b. Where the permittee seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph 40 CFR 63.1958(c), provide a statement of the wellhead operational standard for temperature and oxygen for the period covered by the report. Indicate the number of times each of those parameters monitored under 40 CFR 63.1961(a)(3) were exceeded. For each instance, report the date, time, and duration of each exceedance. **(40 CFR 63.1981(h)(1)(i))**
 - c. Where the permittee seeks to demonstrate compliance with the operational standard for temperature in 40 CFR 63.1958(c)(1), provide a statement of the wellhead operational standard for temperature and oxygen for the period covered by the report. Indicate the number of times each of those parameters monitored under 40 CFR 63.1961(a)(4) were exceeded. For each instance, report the date, time, and duration of each exceedance. **(40 CFR 63.1981(h)(1)(ii))**

- d. The date of installation and the location of each well or collection system expansion added pursuant to 40 CFR 63.1960(a)(3) and (a)(4), (b), and (c)(4). **(40 CFR 63.1981(h)(6))**
- e. The permittee must record instances when a positive pressure occurs in efforts to avoid fire. **(40 CFR 63.1958(b)(1))**
- f. Include any corrective action analysis for which corrective actions are required in 40 CFR 63.1960(a)(3)(i) or (a)(5) and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates. **(40 CFR 63.1981(h)(7))**
- g. Each permittee required to conduct enhanced monitoring in 40 CFR 63.1961(a)(5) and (6) must include the results of all monitoring activities conducted during the period; **(40 CFR 63.1981(h)(8))**
 - i. For each monitoring point, report the date, time, and well identifier along with the value and units of measure for oxygen, temperature (wellhead and downwell), methane, and carbon monoxide. **(40 CFR 63.1981(h)(8)(i))**
 - ii. Include a summary trend analysis for each well subject to the enhanced monitoring requirements to chart the weekly readings over time for oxygen, wellhead temperature, methane, and weekly or monthly readings over time, as applicable for carbon monoxide. **(40 CFR 63.1981(h)(8)(ii))**
 - iii. Include the date, time, staff person name, and description of findings for each visual observation for subsurface oxidation event. **(40 CFR 63.1981(h)(8)(iii))**
5. The permittee must submit information regarding corrective actions as follows:
 - a. For corrective action that is required according to 40 CFR 63.1960(a)(3) or (a)(4) and is not completed within 60 days after the initial exceedance, submit a notification to the Department as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature exceedance. **(40 CFR 63.1981(j)(1))**
 - b. For corrective action that is required according to 40 CFR 63.1960(a)(3) or (4) and is expected to take longer than 120 days after the initial exceedance to complete, submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Department as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature monitoring value of 62.8°C (145°F) or above. The Department must approve the plan for corrective action and the corresponding timeline. **(40 CFR 63.1981(j)(2))**
6. Where the permittee seeks to demonstrate compliance with the operational standard for temperature in 40 CFR 63.1958(c)(1) and a landfill gas temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7°C (170°F) and the carbon monoxide concentration measured is greater than or equal to 1,000 ppmv, report the date, time, well identifier, temperature and carbon monoxide reading via email to the Department within 24 hours of the measurement unless a higher operating temperature value has been approved by the Department for the well under this subpart or under 40 CFR Part 60, Subpart WWW; 40 CFR Part 60, Subpart XXX; or a Federal plan or USEPA approved and effective state plan that implements either 40 CFR Part 60, Subpart Cc or 40 CFR Part 60, Subpart Cf. **(40 CFR 63.1981(k))**
7. Beginning no later than September 27, 2021, the permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(l)(1)(i))**

- b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(I)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The semiannual reports and bioreactor 40-percent moisture reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(I)(2))**
8. The permittee shall submit all monitoring activities and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENTS

1. Each permittee seeking to demonstrate compliance with 40 CFR 63.1959(b)(2)(ii)(B)(4) through the use of a collection system not conforming to the specifications provided in 40 CFR 63.1962 must provide information satisfactory to the Department as specified in 40 CFR 63.1981(c)(3) demonstrating that off-site migration is being controlled. **(40 CFR 63.1960(a)(5))**
2. Each permittee seeking to install a collection system that does not meet the specifications in 40 CFR 63.1962 or is seeking to monitor alternative parameters to those required by 40 CFR 63.1958 through 40 CFR 63.1961 must provide information satisfactory to the Department as provided in 40 CFR 63.1981(d)(2) and (3) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Department may specify additional appropriate monitoring procedures. **(40 CFR 63.1961(e))**
3. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

FGTREATMENTSYS-AAAA FLEXIBLE GROUP CONDITIONS
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NOTE: These requirements should be included in Section 2 of the ROP (for Blue Water Renewables, LLC) since they own and operate the Treatment System and associated RICE engines.

DESCRIPTION

A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Emission Unit: EUTREATMENTSYS

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatment system subject to 40 CFR 63.1959(b)(2)(iii)(A) or (B).

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate the treatment system at all times when the collected gas is routed to the treatment system. **(40 CFR 63.1958(f))**
2. The permittee must operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system must comply with 40 CFR 63.1959(b)(2)(iii)(A) or (B). **(40 CFR 63.1959(b)(2)(iii)(C) and (D))**
3. The permittee must develop a site-specific treatment system monitoring plan as required in 40 CFR 63.1983(b)(5)(ii). The plan must at a minimum contain the following: **(40 CFR 63.1961(g))**
 - a. Monitoring of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. **(40 CFR 63.1983(b)(5)(ii)(A))**
 - b. Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas. **(40 CFR 63.1983(b)(5)(ii)(B))**
 - c. Documentation of the monitoring methods and ranges, along with justification for their use. **(40 CFR 63.1983(b)(5)(ii)(C))**
 - d. List of responsible staff (by job title) for data collection. **(40 CFR 63.1983(b)(5)(ii)(D))**
 - e. Processes and methods used to collect the necessary data. **(40 CFR 63.1983(b)(5)(ii)(E))**
 - f. Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems (CMS). **(40 CFR 63.1983(b)(5)(ii)(F))**
4. The monitoring requirements apply at all times the treatment system is operating except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities. The permittee must complete monitoring system repairs in

response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable. **(40 CFR 63.1961(h))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee must install and properly operate a treatment system in accordance with 40 CFR 63.1981(d)(2). **(40 CFR 63.1961(d))**
2. The permittee must install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; and secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. **(40 CFR 63.1961(g))**

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep monthly records of all treatment system operating parameters specified to be monitored according to 40 CFR 63.1961. The records must include:
 - a. Continuous records of the indication of flow and gas flow rate to the treatment system. **(40 CFR 63.1983(c)(2))**
 - b. The indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines. **(40 CFR 63.1983(c)(2))**
 - c. Maintenance and repair of the monitoring system. **(40 CFR 63.1961(h))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee must submit to the appropriate AQD District Office semiannual reports for the landfill gas treatment system. The reports must be received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. The reports must include the following:
 - a. The number of times the parameters for the treatment system under 40 CFR 63.1961(g) were exceeded. **(40 CFR 63.1981(h)(1)(iii))**
 - b. Description and duration of all periods when the gas stream is diverted from the treatment system through a bypass line or the indication of bypass flow. **(40 CFR 63.1981(h)(2))**
 - c. Description and duration of all periods when the treatment system was not operating and length of time the treatment system was not operating. **(40 CFR 63.1981(h)(3))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool

(ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(I)(1)(i))**

- b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(I)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The semiannual reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(I)(2))**
6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

- 1. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

FGOPENFLARE-AAAA & FGVENTFLARE-AAAA FLEXIBLE GROUP CONDITIONS
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DESCRIPTION

Open (non-enclosed) flare is an open combustor without enclosure or shroud. Seven (7) self-igniting solar flares. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Emission Unit: EUOPENFLARE & EUVENTFLARE

POLLUTION CONTROL EQUIPMENT

Open (non-enclosed) flare & seven (7) self-igniting solar flares

I. EMISSION LIMIT(S)

1. There must be no visible emissions from EUOPENFLARE and EUVENTFLARE except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. **(40 CFR 63.11(b)(4))**

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate EUOPENFLARE at all times when the collected gas is routed to it. **(40 CFR 63.11(b)(3), 40 CFR 63.1958(f))** For EUVENTFLARE, as approved by U.S. EPA, the requirement to operate the vent flare at all times when the collected gas is routed to it is satisfied by the continuous ignition system and following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 63.1958(e)(1), 40 CFR 63.1981(d)(6), 40 CFR 63.1955(a))**
2. The flare must be operated with a flame present at all times. **(40 CFR 63.11(b)(5))**
3. In the event the control system is inoperable, the gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within one hour. **(40 CFR 63.1958(e)(1)(i))** For the passive gas collection system, as approved by U.S. EPA, the requirement to close valves within one hour in the event of control device malfunction is satisfied by following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 63.1958(e)(1), 40 CFR 63.1981(d)(6), 40 CFR 63.1955(a))**
4. In the event the control system is inoperable, efforts to repair the collection system must be initiated and completed in a manner such that downtime is kept to a minimum, and the collection and control system must be returned to operation. **(40 CFR 63.1958(e)(1)(ii))**
5. At all times, the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 63.1955(c))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee must design and operate EUOPENFLARE and EUVENTFLARE in accordance with the parameters established in 40 CFR 63.11(b). **(40 CFR 63.1959(b)(2)(iii)(A))**

Spell Out Date {e.g. JANUARY 01, 2022} - WORKING DRAFT

ROP No: MI-ROP--

Expiration Date:

PTI No: MI-PTI--

2. The permittee must install, calibrate, maintain, and operate according to the manufacturer's specifications, a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. **(40 CFR 63.11(b)(5), 40 CFR 63.1961(c)(1))**
3. For EUOPENFLARE, the permittee must install, calibrate, maintain, and operate according to the manufacturer's specifications, a device that records flow to or bypass of the flare (if applicable) at least every 15 minutes. **(40 CFR 63.1961(c)(2))**

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within 180 days of permit issuance, the permittee must verify visible emissions, the net heating value, and exit velocity from EUOPENFLARE and at a minimum, every five years from the date of the last test, thereafter. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**
2. The permittee must notify the appropriate AQD District Supervisor not less than 30 days before testing of the time and place performance tests will be conducted. **(R 336.1213(3))**

See Appendix 7

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For EUOPENFLARE, the permittee must maintain records regarding the flare type (i.e., steam-assisted, air-assisted, or non-assisted), 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 63.11. **(40 CFR 63.1983(b)(4))**
2. For EUOPENFLARE, the permittee must keep monthly records of the operating parameters specified to be monitored in 40 CFR 63.1961(c). The records must include:
 - a. Continuous records of the indication of flow and gas flow rate to the control device. **(40 CFR 63.1983(b)(4))**
 - b. The indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines. **(40 CFR 63.1961(c)(2)(ii))**
 - c. Continuous records of the open flare pilot flame or open flare flame monitoring, and records of all periods of operations during which the pilot flame of the flare flame is absent. **(40 CFR 63.1983(b)(4))**
3. For EUVENTFLARE, weekly inspections of spark plug performance of the non-assisted flares shall be completed and records shall be kept onsite. In the event of a spark plug failure, the permittee has five days to correct the malfunction. If the malfunction cannot be corrected within five days, a deviation will be reported during semiannual NESHAP report.
4. For EUVENTFLARE, the permittee shall perform the following monitoring on a monthly basis: **(40 CFR 63.1959(a)(2)(ii)(A), 40 CFR 63.1955(a))**
 - a. Downloading of the data collected by the data logger.
 - b. Visual inspection of each flare to verify that components of the flare have not become damaged by weather conditions or vandalism.

See Appendix 7

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee must submit to the appropriate AQD District Office semiannual reports for the control system. Reports must be received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. For flares, reportable exceedances are defined under 40 CFR 63.1961(c). The reports must include the following:
 - a. 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. **(40 CFR 63.1981(h)(2))**
 - b. Description and duration of all periods when the control device was not operating and length of time the control device was not operating. **(40 CFR 63.1981(h)(3))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(l)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(l)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The semiannual reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(l)(2))**
6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO ₂ e	Carbon Dioxide Equivalent
CEMS	Continuous Emission Monitoring System	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
Department/ department	Michigan Department of Environment, Great Lakes, and Energy	gr	Grains
EGLE	Michigan Department of Environment, Great Lakes, and Energy	HAP	Hazardous Air Pollutant
EU	Emission Unit	Hg	Mercury
FG	Flexible Group	hr	Hour
GACS	Gallons of Applied Coating Solids	HP	Horsepower
GC	General Condition	H ₂ S	Hydrogen Sulfide
GHGs	Greenhouse Gases	kW	Kilowatt
HVLP	High Volume Low Pressure*	lb	Pound
ID	Identification	m	Meter
IRSL	Initial Risk Screening Level	mg	Milligram
ITSL	Initial Threshold Screening Level	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	NMOC	Non-methane Organic Compounds
MAP	Malfunction Abatement Plan	NO _x	Oxides of Nitrogen
MSDS	Material Safety Data Sheet	ng	Nanogram
NA	Not Applicable	PM	Particulate Matter
NAAQS	National Ambient Air Quality Standards	PM10	Particulate Matter equal to or less than 10 microns in diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	%	Percent
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SDS	Safety Data Sheet	TAC	Toxic Air Contaminant
SNCR	Selective Non-Catalytic Reduction	Temp	Temperature
SRN	State Registration Number	THC	Total Hydrocarbons
TEQ	Toxicity Equivalence Quotient	tpy	Tons per year
USEPA/EPA	United States Environmental Protection Agency	µg	Microgram
VE	Visible Emissions	µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee must continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 1 (Smiths Creek). Therefore, this appendix is not applicable.

Appendix 7. Emission Calculations

The permittee must use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in **FGACTIVECOLL-AAAA** and **FGOPENFLARE-AAAA** for 40 CFR Part 63, Subpart AAAA.

Calculation used to determine NMOC emissions from any nonproductive area

The following must be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Department upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. (40 CFR 63.1962(a)(3)(ii))

The NMOC emissions from each section proposed for exclusion must be computed using Equation 7 (40 CFR 63.1962(a)(3)(ii)(A)):

$$Q_i = 2 k L_o M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

Where:

Q_i = NMOC emission rate from the i th section, Mg/yr

k = methane generation rate constant, year⁻¹

L_o = methane generation potential, m³/Mg solid waste

M_i = mass of the degradable solid waste in the i th section, Mg

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of non-methane organic compounds, ppmv

3.6×10^{-9} = conversion factor

If the permittee is proposing to exclude, or cease gas collection and control from, nonproductive physically separated (e.g., separately lined) closed areas that already have gas collection systems, NMOC emissions from each physically separated closed area must be computed using either Equation 3 in 40 CFR 63.1959(c) or Equation 7 in 40 CFR 63.1962(a)(3)(ii)(A). **(40 CFR 63.1962(a)(3)(ii)(B))**

The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, L_o and C_{NMOC} provided in 40 CFR 63.1959(a)(1) or the alternative values from 40 CFR 63.1959(a)(5) must be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 63.1962(a)(3)(i). **(40 CFR 63.1962(a)(3)(iii))**

Net Heating Value of the gas being combusted in the flare:

The permittee has the choice of adhering to the heat content specifications in 40 CFR 63.11(b)(6)(ii) (equations below), and the maximum tip velocity specifications in 40 CFR 63.11(b)(7) or (b)(8), or adhering to the requirements in 40 CFR 63.11(b)(6)(i). **(40 CFR 63.11(b)(6))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of off gas is based on combustion at 25°C and 760 mmHg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = Constant (1.740 \times 10^{-7}) \left(\frac{1}{ppm} \right) \left(\frac{g \text{ mole}}{scm} \right) \left(\frac{MJ}{kcal} \right)$$

Where the standard temperature for $\left(\frac{g \text{ mole}}{scm} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 63.14); and

H_i = Net heat of combustion of sample component i, kcal/g mole at 25°C and 760 mmHg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 (incorporated by reference as specified in 40 CFR 63.14) if published values are not available or cannot be calculated.

Calculation for Vmax steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 63.11(b)(7)(i) must be calculated and recorded using the equation provided in 40 CFR 63.18(b)(7)(iii). **(40 CFR 63.18(b)(7)(iii))**

$$\text{Log}_{10} (V_{max}) = (H_T + 28.8)/31.7$$

Where:

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in 63.11(b)(6).

Calculation for Vmax for air-assisted flares

The maximum permitted velocity, V_{max} , for air-assisted flares must be calculated and recorded using the equation provided in 40 CFR 63.11(b)(8). **(40 CFR 63.11(b)(8))**

$$V_{max} = 8.71 + 0.708 (H_T)$$

Where:

V_{max} = Maximum permitted velocity, m/sec

8.71 = Constant

0.708 = Constant

H_T = The net heating value as determined in 63.11(b)(6)(ii).

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee must use EGLE, AQD, Report Certification form (EQP 5736) and EGLE, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, emission unit and/or flexible group special conditions. Therefore, Part B of this appendix is not applicable.

C. Other Reporting - Calculations

Permit No. 163-09D APPENDIX A Procedures for Calculating Emissions

The permittee shall demonstrate compliance with the emission limits in this permit by vendor data, stack testing, and/or gas testing.

Vendor Data or Stack Testing:

The permittee shall use emission factors from vendor data or from source specific testing (if stack test data is available, use most recent stack test data), as available for each emission unit included in FGFACILITY. The permittee shall use emission factors contained in the most recent AP-42 (Compilation of Air Pollutant Emission Factors) or the most recent FIRE (Factor Information Retrieval) database if vendor or stack testing data is not available. If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions. The permittee shall document the source of each emission factor used in the calculations.

Calculation for Monthly SO₂ Emissions:

The following calculation for SO₂ emissions shall utilize the monthly average of the weekly (or daily, if required) H₂S concentration measurements from test data collected, the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test.

SO2 Emissions (tons per month)

$$\begin{aligned}
 &= \frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} \times \frac{1.1733 \text{ mols Sulfur}}{\text{ft}^3} \times \frac{34.08 \text{ grams}}{\text{mol Sulfur}} \times \frac{\text{pound}}{453.59 \text{ grams}} \\
 &\times \frac{1 \text{ ton}}{2,000 \text{ pounds}} \times \frac{1.88 \text{ SO}_2}{\text{H}_2\text{S}} \text{Molecular Weight Ratio} \times \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} \times \text{Monthly Landfill Gas Usage (ft}^3\text{/month)}
 \end{aligned}$$

This is the template for 40 CFR Part 62, Subpart OOO - 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 which have actual non-methane organic compounds (NMOC) emissions equal to or greater than 34 megagrams per year.

This template is meant to be inserted into the ROP shell document along with the associated parts and appendices that are specific to this template.

Included is the emission unit name, description, and some instructions for Part C, the Emission Unit Summary Table and Part D, Flexible Group Special Conditions. Other emission units may be needed for the ROP.

C. EMISSION UNIT SPECIAL CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EULANDFILL	A Municipal Solid Waste (MSW) landfill that commenced construction, reconstruction, or modification on or before July 17, 2014 and has not been modified or reconstructed since July 17, 2014 and has accepted waste at any time since November 8, 1987. The MSW landfill has a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions equal to or greater than 34 Mg per year.	12/31/1989 / Modified May, 2014	FGLANDFILL-000
EUACTIVECOLL & EUPASSIVECOLL	This emission unit represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment.	10/31/2002	FGLANDFILL-000 FGACTIVECOLL-000 FGPASSIVECOLL-000
EUTREATMENTSYS NOTE: These requirements should be included in Section 2 of the ROP (for Blue Water Renewables, LLC) since they own and operate the Treatment System and associated RICE engines.	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. The treatment system removes particulate to at least the 10-micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion of gas for subsequent use.	06/01/2011	FGLANDFILL-000 FGTREATMENTSYS-000
EUOPENFLARE	Open flare is an open combustor without enclosure or shroud.	10/31/2002	FGLANDFILL-000 FGOPENFLARE-000

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EUVENTFLARE	Consists of seven self-igniting (solar powered) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of six of the solar flares was performed on March 18, 2003; the 7 th flare will be tested within 180 days of startup.	10/31/2002 (six flares) & 9/21/2022 (7 th flare)	FGLANDFILL-OOO FGVENTFLARE-OOO

D. FLEXIBLE GROUP SPECIAL CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FGLANDFILL-OOO	This flexible group represents the general MSW landfill with a required collection and control system. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	EULANDFILL
FGACTIVECOLL-OOO & FGPASSIVECOLL-OOO	This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment, and the passive landfill gas collection system. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	EUACTIVECOLL & EUPASSIVECOLL
FGTREATMENTSYS-OOO	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	This flexible group should be included in Section 2 of the ROP for Blue Water Renewables, LLC
FGOPENFLARE-OOO	Open (non-enclosed) flare is an open combustor without enclosure or shroud. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	EUOPENFLARE
FGVENTFLARE-OOO	Self-igniting (solar powered) flares are open combustors and are not enclosed or shrouded. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	EUVENTFLARE

FGLANDFILL-000 FLEXIBLE GROUP CONDITIONS

DESCRIPTION

This flexible group represents the general MSW landfill with a required active and passive collection and control system. This flexible group contains 40 CFR Part 62, Subpart 000 requirements.

Emission Units: EULANDFILL, EUACTIVECOLL, EUTREATMENTSYS, EUOPENFLARE & EUVENTFLARE

POLLUTION CONTROL EQUIPMENT

Most of the landfill gas is collected and combusted in an open flare or combusted in the internal combustion engines to generate electricity. Some gas is combusted in passive solar vent flares.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

NA

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee must install a collection and control system that captures the landfill gas generated within the landfill according to the requirements in 40 CFR 62.16714(b) and 40 CFR 62.16714(c). **(40 CFR 62.16714(a)(3))**
2. The permittee must route all the collected landfill gas to at least one of the following:
 - a. A non-enclosed flare designed in accordance with 40 CFR 60.18 except as noted in 40 CFR 62.16722(d). **(40 CFR 62.16714(c)(1))**
 - b. A control system designed and operated to reduce NMOC by 98 weight percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 ppmv on dry basis, as hexane at 3% oxygen. **(40 CFR 62.16714(c)(2))**
 - c. To a treatment system that processes the collected gas for subsequent sale or beneficial use. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either 40 CFR 62.16714(c)(1) or (2). **(40 CFR 62.16714(c)(3))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report that triggered 40 CFR 62.16714(e), the current amount of solid waste in place, and the year-by-year waste

acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable. The permittee must keep all records on file in a format acceptable to the AQD District Supervisor and make them available upon request. **(R 336.1213(3), 40 CFR 62.16726(a))**

2. Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, as provided in the definition of "design capacity", must keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable. **(40 CFR 62.16726(f))**
3. If reporting leachate or other liquids addition under 40 CFR 62.16724(l), the permittee must keep records of any engineering calculations or company records used to estimate the quantities of leachate or liquids added, the surface areas for which the leachate or liquids were applied, and the estimates of annual waste acceptance or total waste in place in the areas where leachate or liquids were applied. **(40 CFR 62.16726(j))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
5. Annually, the permittee must submit a liquids addition report, to the Administrator, within 365 days after the date the previous report was submitted with the following information: **(40 CFR 62.16724(l))**
 - a. Volume of leachate recirculated (gallons per year) and the reported basis of those estimates (records or engineering estimates). **(40 CFR 62.16724(l)(1))**
 - b. Total volume of all other liquids added (gallons per year) and the reported basis of those estimates (records or engineering estimates). **(40 CFR 62.16724(l)(2))**
 - c. Surface area (acres) over which the leachate is recirculated (or otherwise applied). **(40 CFR 62.16724(l)(3))**
 - d. Surface area (acres) over which any other liquids are applied. **(40 CFR 62.16724(l)(4))**
 - e. The total waste disposed (megagrams) in the areas with recirculated leachate and/or added liquids based on on-site records to the extent data are available, or engineering estimates and the reported basis of those estimates. **(40 CFR 62.16724(l)(5))**
 - f. The annual waste acceptance rates (megagrams per year) in the areas with recirculated leachate and/or added liquids, based on on-site records to the extent data are available, or engineering estimates. **(40 CFR 62.16724(l)(6))**
 - g. The initial report must contain items (a) through (f) for the initial annual reporting period as well as for each of the previous 10 years, to the extent historical data are available in on-site records, and the report must be submitted no later than June 21, 2022. Subsequent annual reports must contain items (a) through (f) and be submitted no later than 365 days after the date the previous report was submitted and contain data for the most recent 365 days. **(40 CFR 62.16724(l)(7))**
6. The permittee must submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment. **(40 CFR 62.16724(g))**

- a. The equipment removal report must contain all of the following items:
 - i. A copy of the closure report submitted in accordance with 40 CFR 62.16724(f). **(40 CFR 62.16724(g)(1)(i))**
 - ii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 34 megagrams or greater of NMOC per year. **(40 CFR 62.16724(g)(1)(iii))**
 - iii. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired. **(40 CFR 62.16724(g)(1)(ii))**
 - b. The Administrator may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 62.16714(f) have been met. **(40 CFR 62.16724(g)(2))**
7. The permittee must submit a closure report to the Administrator within 30 days of waste acceptance cessation. The Administrator may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Administrator, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). **(40 CFR 62.16724(f))**
8. The permittee must submit reports electronically according to the following:
- a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the Administrator at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. **(40 CFR 62.16724(j)(2))**
9. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENTS

1. If the permittee has submitted a design plan under 40 CFR 62.16724(d), the permittee must submit a revised design plan to the Administrator for approval as follows:

- a. At least 90 days before expanding operations to an area not covered by the previously approved design plan. **(40 CFR 62.16724(e)(1))**
 - b. Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted to the Administrator under 40 CFR 62.16724(d). **(40 CFR 62.16724(e)(2))**
2. The collection and control system may be capped, removed, or decommissioned if the following criteria are met:
- a. The landfill is a closed landfill (as defined in 40 CFR 62.16730). A closure report must be submitted to the Administrator as provided in 40 CFR 62.16724(f). **(40 CFR 62.16714(f)(1))**
 - b. The collection and control system must have been in operation a minimum of 15 years or the landfill owner or operator demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flow. **(40 CFR 62.16714(f)(2))**
 - c. Following the procedures specified in 40 CFR 62.16718(b), the calculated NMOC emission rate at the landfill is less than 34 Mg per year on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart. **(40 CFR 62.16714(f)(3))**
3. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

**FGACTIVECOLL-000 & FGPASSIVECOLL-000
FLEXIBLE GROUPCONDITIONS**

DESCRIPTION

This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment. This group also includes the passive collection system. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.

Emission Unit: EUACTIVECOLL

POLLUTION CONTROL EQUIPMENT

One (1) open flare and one self-igniting solar flare serving the active portion of the landfill and six (6) self-igniting solar flares serving the closed portion of the landfill. The solar flares were approved by the United States Environmental Protection Agency.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

NA

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee must install an active collection system that meets the following requirements:
 - a. Designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control system equipment. **(40 CFR 62.16714(b)(2)(i))**
 - b. Collects gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active; or 2 years or more if closed or at final grade. **(40 CFR 62.16714(b)(2)(ii))**
 - c. Each well must be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of 5 years or more if active; or 2 years or more if closed at final grade. **(40 CFR 62.16720(b))**
 - d. Collects gas at a sufficient extraction rate. **(40 CFR 62.16714(b)(2)(iii))**
 - e. Designed to minimize off-site migration of subsurface gas. **(40 CFR 62.16714(b)(2)(iv))**
2. The permittee must route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-BTU gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either 40 CFR 62.16714(c)(1) or (2). **(40 CFR 62.16714(c)(3))**
3. The permittee must site active gas collection devices as required in 40 CFR 62.16728 and must control all gas producing areas, except as provided below.

- a. Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under 40 CFR 62.16726(d). **(40 CFR 62.16728(a)(3)(i))**
 - b. Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section must be computed using the equation in Appendix 7. **(40 CFR 62.16728(a)(3)(ii))**
4. The permittee must install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead. **(40 CFR 62.16722(a))**

See Appendix 7

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Each permittee that chooses to comply with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, must keep records of the date upon which the permittee started complying with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961 and must keep records according to 40 CFR 63.1983(e)(1) through (5). **(40 CFR 62.16726(e))**
2. The permittee must keep up-to-date, readily accessible records for the life of the control equipment of the data where the permittee seeks to demonstrate compliance with 40 CFR 62.16714(b) listed as follows:
 - a. The maximum expected gas generation flow rate as calculated in 40 CFR 62.16720(a)(1). **(40 CFR 62.16726(b)(1)(i))**
 - b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 62.16728(a)(1). **(40 CFR 62.16726(b)(1)(ii))**
3. The permittee must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector that matches the labeling on the plot map and the following up-to-date, readily accessible records. **(40 CFR 62.16726(d))**
 - a. The installation date and location of all newly installed collectors as specified under 40 CFR 62.16720(b). **(40 CFR 62.16726(d)(1))**
 - b. Documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in 40 CFR 62.16728(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in 40 CFR 62.16728(a)(3)(ii). **(40 CFR 62.16726(d)(2))**
4. The permittee must maintain the following information:
 - a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion. **(40 CFR 62.16724(i)(1))**
 - b. The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based. **(40 CFR 62.16724(i)(2))**

- c. The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. **(40 CFR 62.16724(i)(3))**
- d. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. **(40 CFR 62.16724(i)(4))**
- e. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. **(40 CFR 62.16724(i)(5))**
- f. The provisions for the control of off-site migration. **(40 CFR 62.16724(i)(6))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed at 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
5. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the corrective action and the corresponding timeline reporting requirements in 40 CFR 63.1981(j) in lieu of 40 CFR 62.16724(k). **(40 CFR 62.16724(k))**
6. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the USEPA at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. **(40 CFR 62.16724(j)(2))**

7. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENTS

1. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

**FGTREATMENTSYS-OOO
FLEXIBLE GROUPCONDITIONS**

NOTE: THIS SET OF FLEXIBLE GROUP CONDITIONS SHOULD BE PLACED IN SECTION 2 OF THE ROP (BLUE WATER RENEWABLES, LLC)

DESCRIPTION

A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.

Emission Unit: EUTREATMENTSYS

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatment system subject to 40 CFR 62.16714(c)(1) or (2).

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system must comply with 40 CFR 62.16714(c)(1) or (2). **(40 CFR 62.16714(c)(3) and (4))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Each permittee that chooses to comply with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, must keep records of the date upon which the permittee started complying with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961 and must keep records according to 40 CFR 63.1983(e)(1) through (5). **(40 CFR 62.16726(e))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the USEPA at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. **(40 CFR 62.16724(j)(2))**
6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACKVENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the

Spell Out Date {e.g. JANUARY 1, 2022} - WORKING DRAFT

ROP No: MI-ROP--

Expiration Date:

PTI No: MI-PTI-

permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

**FGOPENFLARE-OOO & FGVENTFLARE-OOO
FLEXIBLE GROUPCONDITIONS**

DESCRIPTION

Open (non-enclosed) flare is an open combustor without enclosure or shroud. Seven (7) self-igniting solar flares. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.

Emission Unit: EUOPENFLARE & EUVENTFLARE

POLLUTION CONTROL EQUIPMENT

Open (non-enclosed) flare & seven (7) self-igniting solar flares

I. EMISSION LIMIT(S)

1. There must be no visible emissions from EUOPENFLARE and EUVENTFLARE except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. **(40 CFR 60.18(c)(1))**

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate the flare in accordance with 40 CFR 60.18. **(40 CFR 62.16714(c)(1))**
2. The flare must be operated with a flame present at all times. **(40 CFR 60.18(c)(2))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within 180 days of permit issuance, the permittee must verify visible emissions, the net heating value, and exit velocity from EUOPENFLARE and at a minimum, every five years from the date of the last test, thereafter. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004, 40 CFR 60.18(f))**
2. The permittee must notify the AQD Technical Programs Unit Supervisor and the District Supervisor not less than 30 days of the time and place before performance tests are conducted. **(R 336.1213(3))**

See Appendix 7

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep up-to-date, readily accessible records for the life of the control equipment of the data as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring must be maintained for a minimum of 5 years. Records of the control device vendor specifications must be maintained until removal. **(40 CFR 62.16726(b))**

2. For EUOPENFLARE, where the permittee seeks to demonstrate compliance with 40 CFR 62.16714(c)(1) through use of a non-enclosed flare, the flare type (*i.e.*, steam-assisted, air-assisted, or non-assisted), 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; and 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 62.16726(b)(4))**
3. The following records for the flare must be maintained onsite:
 - a. The net heating value of the gas being combusted in the flare must be calculated and recorded using the equation provided in Appendix 7. **(40 CFR 60.18(f)(3))**
 - b. The exit velocity for steam-assisted, air-assisted, or non-assisted flares as determined by the methods specified in 40 CFR 60.18(f)(4) provided in Appendix 7. **(40 CFR 60.18(f)(4))**
4. Each permittee that chooses to comply with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, must keep records of the date upon which the permittee started complying with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961. **(40 CFR 62.16726(e))**

See Appendix 7

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed at 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the USEPA at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must

begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted.

(40 CFR 62.16724(j)(2))

6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO ₂ e	Carbon Dioxide Equivalent
CEMS	Continuous Emission Monitoring System	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
Department/ department	Michigan Department of Environment, Great Lakes, and Energy	gr	Grains
EGLE	Michigan Department of Environment, Great Lakes, and Energy	HAP	Hazardous Air Pollutant
EU	Emission Unit	Hg	Mercury
FG	Flexible Group	hr	Hour
GACS	Gallons of Applied Coating Solids	HP	Horsepower
GC	General Condition	H ₂ S	Hydrogen Sulfide
GHGs	Greenhouse Gases	kW	Kilowatt
HVLP	High Volume Low Pressure*	lb	Pound
ID	Identification	m	Meter
IRSL	Initial Risk Screening Level	mg	Milligram
ITSL	Initial Threshold Screening Level	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	NMOC	Non-methane Organic Compounds
MAP	Malfunction Abatement Plan	NO _x	Oxides of Nitrogen
MSDS	Material Safety Data Sheet	ng	Nanogram
NA	Not Applicable	PM	Particulate Matter
NAAQS	National Ambient Air Quality Standards	PM10	Particulate Matter equal to or less than 10 microns in diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	%	Percent
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SDS	Safety Data Sheet	TAC	Toxic Air Contaminant
SNCR	Selective Non-Catalytic Reduction	Temp	Temperature
SRN	State Registration Number	THC	Total Hydrocarbons
TEQ	Toxicity Equivalence Quotient	tpy	Tons per year
USEPA/EPA	United States Environmental Protection Agency	µg	Microgram
VE	Visible Emissions	µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. **(R 336.1213(4)(a), R 336.1119(a)(ii))**

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 1 (Smiths Creek). Therefore, this appendix is not applicable.

Appendix 7. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FGACTIONECOLL-000 and FGOPENFLARE-000.

Calculation used to determine NMOC emissions from any nonproductive area

The following shall be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Administrator upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section must be computed using the following equation: **(40 CFR 62.16728(a)(3)(ii)(A))**

$$Q_i = 2 k L_o M_i (e^{-kti}) (C_{NMOC}) (3.6 \times 10^{-9})$$

Where:

Q_i = NMOC emission rate from the i th section, Mg per year

k = methane generation rate constant, year⁻¹

L_o = methane generation potential, cubic meters per Mg solid waste

M_i = mass of the degradable solid waste in the i th section, Mg

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of non-methane organic compounds, ppm by volume

3.6×10^{-9} = conversion factor

The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_0 and C_{NMOC} provided in 40 CFR 62.16718 or the alternative values from 40 CFR 62.16718 must be used. The mass of non-degradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the non-degradable material is documented as provided in 40 CFR 62.16728(a)(3)(iii).

Net Heating Value of the gas being combusted in the flare:

The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). **(40 CFR 60.18(f)(3))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \text{Constant, } 1.740 \times 10^{-7} \left(\frac{1}{\text{ppm}} \right) \left(\frac{\text{g mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

where the standard temperature for $\left(\frac{\text{g mole}}{\text{scm}} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 60.17); and

H_i = Net heat of combustion of sample component i , kcal/g mole at 25°C and 760 mmHg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

Calculation for Vmax steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(5). **(40 CFR 60.18(f)(5))**

$$\text{Log}_{10} (V_{max}) = (H_T + 28.8) / 31.7$$

Where:

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in 60.18(f)(3).

Calculation for Vmax for air-assisted flares

The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(6). **(40 CFR 60.18(f)(6))**

$$V_{\max} = 8.706 + 0.7084 (H_T)$$

Where:

V_{\max} = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

H_T = The net heating value as determined in 60.18(f)(3).

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use EGLE, AQD, Report Certification form (EQP 5736) and EGLE, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, emission unit and/or flexible group special conditions. Therefore, Part B of this appendix is not applicable.

Section 3

#

DISCUSSION OF NEW AND REVISED APPLICABLE REQUIREMENTS

New Applicable Federal Regulations

40 CFR 62, Subpart OOO (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)

On May 21, 2021, U.S. EPA had a notice published in the federal register finalizing 40 CFR 62, Subpart OOO, which became effective on June 21, 2021. This regulation applies to landfills in Michigan that are not subject to the Landfill NSPS (40 CFR 60 Subpart XXX), since Michigan does not have an approved State Plan for existing landfills pursuant to 40 CFR 60 Subpart Cf.

Previously, it was stated that Smiths Creek was subject to the Landfill XXX NSPS based on the commencement of construction date for Cell 8. However, Cell 8 was part of a landfill expansion approved prior to July 17, 2014. Another cell in that same landfill expansion (Cell 4) had commenced construction in May 2014, which is earlier than the July 17, 2014 XXX NSPS applicability date. Therefore, the Landfill XXX NSPS does not apply to the Smiths Creek Landfill and it must follow the provisions of the Federal Plan. Smiths Creek is considered a “Legacy Controlled Landfill” under the Federal Plan and can therefore skip some of the reporting and testing requirements since these were conducted earlier under a previous federal regulation (old Landfill NSPS – 40 CFR 60 Subpart WWW).

As stated in Section 1 of this application, most of the requirements of the Federal Plan transitioned into the equivalent revised Landfill NESHAP requirements as of September 27, 2021. Very few applicable requirements remain under the Federal Plan. EGLE has put together a template table for the Federal Plan which is included in this application. Obsolete requirements that have been superseded by the revised Landfill NESHAP have been removed from the template. EIL has updated the template to include the solar flares, which were not originally part of EGLE’s template.

Revised Applicable Federal Regulations

40 CFR 63 Subpart AAAA (National Emissions Standards for Hazardous Air Pollutants for Municipal Solid Waste Landfills)

EPA extensively revised the Landfill NESHAP on March 26, 2020 with the intention of making this regulation the primary mechanism for landfill air compliance requirements. The effective date for the regulation was September 27, 2021.

While the revised regulation was very similar to the original Landfill NSPS (40 CFR 60 Subpart WWW), there were several new requirements. These include the following:

- Oxygen was removed as an operational standard although it must still be monitored monthly;
- The operational standard for temperature was increased from 131°F to 145°F;
- Enhanced monitoring is required for wells measuring temperatures of 145°F or above;

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- Thermometers used for temperature measurements must be calibrated annually;
- Cover penetrations must be included in the surface emissions monitoring;
- The location of exceedances must be determined in latitude and longitude coordinates using an instrument with an accuracy of at least four meters. The coordinates must be in decimal degrees with at least five decimal places;
- Sites that have landfill gas treatment systems (such as Smiths Creek) must monitor flow to the treatment system and develop a site-specific treatment monitoring system plan. The results of the monitoring and any exceedances must be described in a semiannual NESHAP report;
- Root cause analysis are required for exceedances which take longer than 15 days to correct. Additional provisions for reporting are triggered for exceedances that take more than 60 days to correct;
- 24 hour temperature notification reports are required for temperature exceedances of more than 170°F and 1000 ppm measured CO concentration; and
- Electronic reporting via CEDRI is required once EPA develops the relevant templates.

NESHAP requirements which were removed as a result of the revisions included the following:

- Landfills are no longer required to maintain a Startup, Shutdown and Malfunction (SSM) plan;
- Semiannual SSM reports are no longer required; and
- Periods of SSM may no longer be excluded from the three hour block average.

No revisions to the bioreactor portions of the NESHAP regulation occurred.

EGLE has prepared a revised template table for the Landfill NESHAP which is included in this application. Similar to the OOO template, EIL has updated the AAAA template to include the solar flares, which are not typical LFG control devices and therefore were not originally part of EGLE's template.

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Section 4

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION**

EFFECTIVE DATE: June 7, 2018

ISSUED TO

Smiths Creek Landfill and Blue Water Renewables, LLC

State Registration Number (SRN): N6207

LOCATED AT

6779 Smiths Creek Road, Smiths Creek (Kimball), Michigan 48074-3508

Style Definition: TOC 1

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-N6207-2018

Expiration Date: June 7, 2023

Administratively Complete ROP Renewal Application
Due Between December 7, 2021 and December 7, 2022

This Renewable Operating Permit (ROP) is issued in accordance with and subject to Section 5506(3) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Pursuant to Michigan Air Pollution Control Rule 210(1), this ROP constitutes the permittee's authority to operate the stationary source identified above in accordance with the general conditions, special conditions and attachments contained herein. Operation of the stationary source and all emission units listed in the permit are subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

SOURCE-WIDE PERMIT TO INSTALL

Permit Number: MI-PTI-N6207-2018

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(5) of Act 451. Pursuant to Michigan Air Pollution Control Rule 214a, the terms and conditions herein, identified by the underlying applicable requirement citation of Rule 201(1)(a), constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. Operation of all emission units identified in the PTI is subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

Michigan Department of Environmental Quality

Joyce Zhu, Southeast Michigan District Supervisor

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AUTHORITY AND ENFORCEABILITY

For the purpose of this permit, the **permittee** is defined as any person who owns or operates an emission unit at a stationary source for which this permit has been issued. The **department** is defined in Rule 104(d) as the Director of the Michigan Department of Environmental Quality (MDEQ) or his or her designee.

The permittee shall comply with all specific details in the permit terms and conditions and the cited underlying applicable requirements. All terms and conditions in this ROP are both federally enforceable and state enforceable unless otherwise footnoted. Certain terms and conditions are applicable to most stationary sources for which an ROP has been issued. These general conditions are included in Part A of this ROP. Other terms and conditions may apply to a specific emission unit, several emission units which are represented as a flexible group, or the entire stationary source which is represented as a Source-Wide group. Special conditions are identified in Parts B, C, D and/or the appendices.

In accordance with Rule 213(2)(a), all underlying applicable requirements are identified for each ROP term or condition. All terms and conditions that are included in a PTI are streamlined, subsumed and/or is state-only enforceable will be noted as such.

In accordance with Section 5507 of Act 451, the permittee has included in the ROP application a compliance certification, a schedule of compliance, and a compliance plan. For applicable requirements with which the source is in compliance, the source will continue to comply with these requirements. For applicable requirements with which the source is not in compliance, the source will comply with the detailed schedule of compliance requirements that are incorporated as an appendix in this ROP. Furthermore, for any applicable requirements effective after the date of issuance of this ROP, the stationary source will meet the requirements on a timely basis, unless the underlying applicable requirement requires a more detailed schedule of compliance.

Issuance of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

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SECTION 1 – Smiths Creek Landfill

A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**
- Those conditions that are hereby incorporated in a state-only enforceable Source-Wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R 336.1214a(5))**
- Those conditions that are hereby incorporated in a federally enforceable Source-Wide PTI pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

1. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as "state-only" are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**
2. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**
3. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee's own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**
4. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities: **(R 336.1213(1)(d))**
 - a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
 - c. Inspect, at reasonable times, any of the following:
 - i. Any stationary source.
 - ii. Any emission unit.
 - iii. Any equipment, including monitoring and air pollution control equipment.
 - iv. Any work practices or operations regulated or required under the ROP.
 - d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.
5. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq., and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

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6. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**
7. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**
8. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

9. Any 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).² **(R 336.1370)**
10. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

11. Unless otherwise specified in this ROP, the permittee shall comply with Rule 301, which states, in part, "Except as provided in subrules 2, 3, and 4 of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:"² **(R 336.1301(1))**
 - a. A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
 - b. A limit specified by an applicable federal new source performance standard.

The grading of visible emissions shall be determined in accordance with Rule 303.
12. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
 - a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.¹ **(R 336.1901(a))**
 - b. Unreasonable interference with the comfortable enjoyment of life and property.¹ **(R 336.1901(b))**

Testing/Sampling

13. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1).² **(R 336.2001)**
14. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**
15. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(5))**

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Monitoring/Recordkeeping

16. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate. **(R 336.1213(3)(b))**
- The date, location, time, and method of sampling or measurements.
 - The dates the analyses of the samples were performed.
 - The company or entity that performed the analyses of the samples.
 - The analytical techniques or methods used.
 - The results of the analyses.
 - The related process operating conditions or parameters that existed at the time of sampling or measurement.
17. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

18. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a Responsible Official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**
19. A Responsible Official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507. **(R 336.1213(4)(c))**
20. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**
21. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP. **(R 336.1213(3)(c))**
- For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
 - For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
 - For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

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22. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following: **(R 336.1213(3)(c))**
- Submitting a certification by a Responsible Official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
 - Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a Responsible Official which states that; "based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete." The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.
23. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**
24. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**
25. 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 appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a Responsible Official in a manner consistent with the CAA.² **(R 336.1912)**

Permit Shield

26. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance, if either of the following provisions is satisfied. **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
- The applicable requirements are included and are specifically identified in the ROP.
 - The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.
- Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.
27. Nothing in this ROP shall alter or affect any of the following:
- The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
 - The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
 - The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**

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- d. The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**
28. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
 - a. Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
 - b. Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**
 - c. Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
 - d. Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
 - e. State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**
29. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

30. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**
31. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**
32. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(10))**
33. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

34. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
 - a. If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
 - b. If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
 - c. If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
 - d. If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

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Renewals

35. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(9))**

Stratospheric Ozone Protection

36. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F.
37. If the permittee is subject to 40 CFR Part 82, and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

38. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).
39. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall comply with the requirements of 40 CFR Part 68, no later than the latest of the following dates as provided in 40 CFR 68.10(a):
- June 21, 1999,
 - Three years after the date on which a regulated substance is first listed under 40 CFR 68.130, or
 - The date on which a regulated substance is first present above a threshold quantity in a process.
40. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68.
41. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c). **(40 CFR Part 68)**

Emission Trading

42. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan's State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

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Permit to Install (PTI)

43. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule.² **(R 336.1201(1))**
44. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA.² **(R 336.1201(8), Section 5510 of Act 451)**
45. The terms and conditions of a PTI 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 the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI 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. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ.² **(R 336.1219)**
46. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months of the original PTI issuance date, or has been interrupted for 18 months, the applicable terms and conditions from that PTI, as incorporated into the ROP, shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P. O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI.² **(R 336.1201(4))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

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SOURCE-WIDE CONDITIONS

POLLUTION CONTROL EQUIPMENT

EU-OPENFLARE-SCL1, EU-VENTFLARE-SCL1

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	225 ² tpy	12-month rolling time period as determined at the end of each calendar month.	FG-FACILITY-BWR2	SC VI.1 Appendix 7-1	R 336.1205(3) 40 CFR 52.21(d)
² The 225 tons of carbon monoxide (CO) emissions limit includes the emissions from Section 1 (landfill) and Section 2 (SI RICE Engines). The emissions are predominantly from the engines.					

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period CO emission calculation records for source wide, as required by Special Condition I.1 and Appendix 7-2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² (R 336.1205(3), 40 CFR 52.21(d))
2. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period landfill gas usage records for FG-FACILITY-BWR2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² (R 336.1205(3), 40 CFR 52.21(c) and (d))

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))

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2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the [Federal Plan New Source Performance Standards](#) as specified in 40 CFR Part [6260](#), Subpart [OOOA and Subpart WWW](#).² **(40 CFR Part 6260 Subpart OOOA and WWW)**
2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart AAAA.² **(40 CFR Part 63 Subparts A and AAAA)**
3. Each Responsible Official shall certify annually the compliance status of the stationary source with all stationary Source-Wide conditions. This certification shall be included as part of the annual certification of compliance as required in the General Conditions in Part A and Rule 213(4)(c). **(R 336.1213(4)(c))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EU-LANDFILL-SCL1	This emission unit represents the Municipal Solid Waste (MSW) Landfill.	12/31/1989	NA
EU- ACTIVECOLLALGCS-SCL1	This emission unit represents the active landfill gas collection system at the landfill. Gas moving equipment draws landfill gas from the wells and delivers it to an open flare. An open flare which combusts landfill gas at active landfill when not burned in SI RICE engines for electric power generation.	10/31/2002	FG- ACTIVECOLL-AAAA & FG-ACTIVECOLL-OOOLGCS-SCL1
EU-OPENFLARE-SCL1	The flare is a combustor without enclosure or shroud.	10/31/2002	FG- OPENFLARE-AAAA & FG-OPENFLARE-OOOCONTROLS-SCL1
EU-VENTFLARE-SCL1	Consists of seven six self-igniting (solar powered) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of six the solar flares was performed on March 18, 2003. <u>Testing of the seventh flare will be initiated within 180 days of September 21, 2022 and is; and, therefore, included is not required by in</u> this table.	10/31/2002 & <u>9/21/2022</u>	FG- VENTFLARE-AAAA & FG-VENTFLARE-OOOCONTROLS-SCL1
EU-BIOREACTOR-SCL1	Represents the portion of the landfill that is expected to be operated as a bioreactor.	08/03/2006	NA
EU-ASBESTOS-SCL1	Any active or inactive asbestos disposal site.	NA	NA
EU-GENERAC-28HP-NG (Generac)	NSPS 4J Emergency Generator. Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: QJ9333.	03/22/2015	FG-EMERGENS-SCL1

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Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-KOHLER-18HP-NG (Kohler)	NSPS 4J Emergency Generator. Installed June 2016. Manufacture date is February 25, 2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.	06/2013	FG-EMERGENS-SCL1
EU- PASSIVECOLLPLGCS-SCL1	This emission unit represents the passive landfill gas collection system at the landfill. This passive system consists of a series of perforated pipes buried in the waste, which delivers landfill gas to one of the six self-igniting (solar power) vent flares where it is combusted. A seventh passive flare is installed at a leachate collection sump.	10/31/2002 & 9/21/2022	FG-PASSIVECOLL-AAAA & FGPASSIVECOLL-OOOFG-LGCS-SCL1

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**EU-LANDFILL EU-LANDFILL-SCL1
 EMISSION UNIT CONDITIONS**

EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replace this section with two sections (one for each regulation).

DESCRIPTION

EU-LANDFILL-SCL1: This emission unit represents the Municipal Solid Waste (MSW) Landfill.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Most of the landfill gas is collected and combusted in an open flare or combusted in the internal combustion engines to generate electricity.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Methane (CH ₄) concentration	500 ppm above background level	Calendar quarter, except as specified in 40 CFR 60.756(f) (See V.5)	Surface of Landfill	SC-V.1 SC-V.2	40 CFR 60.753(d) 40 CFR 60.755(e) 40 CFR 63.1955(a)(1)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall comply with the requirements in 40 CFR 63.1955(b) and 40 CFR 63.1960 through 40 CFR 63.1980. **(40 CFR 63.1945(b))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall have installed a collection and control system that captures the landfill gas generated within the landfill as required by 40 CFR 60.752(b)(2)(i)(C), 40 CFR 60.752(b)(2)(ii), and 40 CFR 60.752(b)(2)(iii). **(40 CFR 60.752(b)(2)(i)(C), 40 CFR 60.752(b)(2)(ii), 40 CFR 60.752(b)(2)(iii), 40 CFR 63.1955(a)(1))**
2. The permittee shall route all the collected landfill gas to at least one of the following:
 - a. A flare designed in accordance with 40 CFR 60.18. **(40 CFR 60.752(b)(2)(iii)(A), 40 CFR 63.1955(a)(1))**
 - b. A control system designed and operated to reduce NMOC by 98 weight percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at three percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance

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~~test, required under 40 CFR 60.8 using the test methods specified in 40 CFR 60.754(d). (40 CFR 60.752(b)(2)(iii)(B), 40 CFR 63.1955(a)(1))~~

- ~~e. A treatment system that processes the collected gas for subsequent sale or use. The treatment system shall be designed so that all emissions from any atmospheric vent(s) shall be subject to 40 CFR 60.752(b)(2)(iii)(B) or (C). (40 CFR 60.752(b)(2)(iii)(C), 40 CFR 63.1955(a)(1))~~

V. TESTING/SAMPLING

~~Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))~~

- ~~1. To determine if the 500 ppm above background methane concentration limit at the surface of the landfill is exceeded, the permittee shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The permittee may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing. (40 CFR 60.753(d), 40 CFR 63.1955(a)(1))~~
- ~~2. The permittee shall use the following procedures for compliance with the surface methane operational standard as provided in 40 CFR 60.753(d):~~
 - ~~a. The permittee shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals (or a site-specific established spacing approved by the AQD) for each collection area on a quarterly basis (except as provided below in Special Condition V.5) using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 40 CFR 60.755(d). (40 CFR 60.755(c)(1), 40 CFR 63.1955(a)(1))~~
 - ~~b. The background concentration shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells. (40 CFR 60.755(c)(2), 40 CFR 63.1955(a)(1))~~
 - ~~c. Surface emission monitoring shall be performed in accordance with Section 4.3.1 of Method 21 of Appendix A of 40 CFR Part 60, except that the probe inlet shall be placed within five to ten centimeters of the ground. Monitoring shall be performed during typical meteorological conditions. (40 CFR 60.755(c)(3), 40 CFR 63.1955(a)(1))~~
 - ~~d. Any reading of 500 parts per million or more above background at any location shall be recorded as a monitored exceedance and the actions specified below shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of 40 CFR 60.753(d). (40 CFR 60.755(c)(4), 40 CFR 63.1955(a)(1))~~
 - ~~i. The location of each monitored exceedance shall be marked and the location recorded. (40 CFR 60.755(c)(4)(i), 40 CFR 63.1955(a)(1))~~
 - ~~ii. Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made and the location shall be re-monitored within 10 calendar days of detecting the exceedance. (40 CFR 60.755(c)(4)(ii), 40 CFR 63.1955(a)(1))~~
 - ~~iii. If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified below (in condition V.2.d.v) shall be taken, and no further monitoring of that location is required until the action specified below (in condition V.2.d.v) has been taken. (40 CFR 60.755(c)(4)(iii), 40 CFR 63.1955(a)(1))~~
 - ~~iv. Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified above (in conditions V.2.d.ii or iii) shall be re-monitored one month from the initial exceedance. If the one-month re-monitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the one-month re-monitoring shows an exceedance, the actions specified above (in condition V.2.d.iii) or below (in condition V.2.d.v) shall be taken. (40 CFR 60.755(c)(4)(iv), 40 CFR 63.1955(a)(1))~~
 - ~~v. For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other collection device shall be installed~~

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within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the AQD for approval. ~~(40 CFR 60.755(c)(4)(v), 40 CFR 63.1955(a)(1))~~

3. The permittee shall comply with the provisions in 40 CFR 60.755(c) with the following instrumentation specifications and procedures for surface emission monitoring devices: ~~(40 CFR 60.755(d), 40 CFR 63.1955(a)(1))~~
 - a. The portable analyzer shall meet the instrument specifications provided in Section 3 of Method 21 of Appendix A of 40 CFR Part 60, except that "methane" shall replace all references to VOC. ~~(40 CFR 60.755(d)(1), 40 CFR 63.1955(a)(1))~~
 - b. The calibration gas shall be methane, diluted to a nominal concentration of 500 ppm in air. ~~(40 CFR 60.755(d)(2), 40 CFR 63.1955(a)(1))~~
 - c. To meet the performance evaluation requirements in Section 3.1.3 of Method 21 of Appendix A of 40 CFR Part 60, the instrument evaluation procedures of Section 4.4 of Method 21 of Appendix A of 40 CFR Part 60 shall be used. ~~(40 CFR 60.755(d)(3), 40 CFR 63.1955(a)(1))~~
 - d. The calibration procedures provided in Section 4.2 of Method 21 of Appendix A of 40 CFR Part 60 shall be followed immediately before commencing a surface monitoring survey. ~~(40 CFR 60.755(d)(4), 40 CFR 63.1955(a)(1))~~
4. The permittee shall keep the following written records pertaining to surface methane monitoring: ~~(R 336.1213(3))~~
 - a. The route traversed including any areas not monitored because of unsafe conditions (i.e., truck traffic, construction, active face, dangerous areas, etc.) and areas included where visual observations indicate elevated levels of landfill gas. ~~(R 336.1213(3))~~
 - b. The location(s) and concentrations of any reading above 500 ppm above background. ~~(40 CFR 60.755(c)(4)(i), R 336.1213(3))~~
 - c. The meteorological conditions the day of the testing including wind speed, wind direction, temperature, and cloud cover. ~~(R 336.1213(3))~~
5. The permittee shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in 40 CFR 60.755(d). Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the monitoring frequency for that landfill to quarterly. ~~(40 CFR 60.756(f), 40 CFR 63.1955(a)(1))~~

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

1. The permittee shall implement a program to monitor on a monthly basis for cover integrity and implement cover repairs as necessary. ~~(40 CFR 60.755(c)(5), 40 CFR 63.1955(a)(1))~~
2. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall maintain up-to-date, readily accessible, on-site records of the design capacity report which triggered 40 CFR 60.752(b), the current amount of solid waste in place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within four hours. Either paper copy or electronic formats are acceptable. ~~(40 CFR 60.758(a), 40 CFR 63.1955(a)(1))~~
3. Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, as provided in the definition of "design capacity," shall keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within four hours. Either paper copy or electronic formats are acceptable. ~~(40 CFR 60.758(f), 40 CFR 63.1955(a)(1))~~

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4. ~~The permittee shall calculate and record the NMOC emission rate for purposes of determining when the system can be removed as provided in 40 CFR 60.752(b)(2)(v), using the equation presented in 40 CFR 60.754(b). (40 CFR 60.754(b))~~
5. ~~If the permittee adds any liquids other than leachate in a controlled fashion to the waste mass and does not comply with the bioreactor requirements in 40 CFR 63.1947, 40 CFR 63.1955(c), and 40 CFR 63.1980(c) through (f), the permittee shall keep a record of calculations showing that the percent moisture by weight expected in waste mass to which liquid is added is less than 40 percent. The calculation must consider the waste mass, moisture content of the incoming waste, mass of the water added to the waste including leachate recirculation and other liquids addition, and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balances calculations can be used. The permittee shall document the calculations and the basis of the assumptions. (40 CFR 63.1980(g))~~

VII. REPORTING

1. ~~Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(iii))~~
2. ~~Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))~~
3. ~~Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be received by appropriate AQD district office by March 15 for the previous calendar year. (R 336.1213(4)(c))~~
4. ~~The permittee shall submit an equipment removal report to the appropriate AQD District Supervisor 30 days prior to removal or cessation of operation of the control equipment. (40 CFR 60.757(e), 40 CFR 63.1955(a)(1))~~
 - a. ~~The equipment removal report shall contain all of the following items:~~
 - i. ~~A copy of the closure report submitted in accordance with 40 CFR 60.757(d). (40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a)(1))~~
 - ii. ~~Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. (40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a)(1))~~
 - iii. ~~A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired. (40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a)(1))~~
 - b. ~~The AQD may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. (40 CFR 60.757(e)(2), 40 CFR 63.1955(a)(1))~~
5. ~~The permittee shall submit reports which shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. The report shall include the location of each exceedance of the 500 parts per million methane concentration as provided above (Special Condition V.1) and the concentration recorded at each location for which an exceedance was recorded in the previous month. The report shall also include information on all deviations that occurred during the six month reporting period. (40 CFR 60.757(f)(5), 40 CFR 63.1955(a)(1), 40 CFR 63.1955(c), 40 CFR 63.1980(a))~~
6. ~~The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD district office and it shall be delivered or postmarked by March 15 for the reporting period of July 1 through December 31 of the previous year and by September 15 for the reporting period of January 1 through June 30 of the same year. (40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))~~

See Appendix 8-4

VIII. STACK/VENT RESTRICTION(S)

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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 Dimensions (inches)	Minimum Height Above-Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The collection and control system may be capped or removed provided that all the following conditions are met:
 - a. The landfill shall be a closed landfill as defined in 40 CFR 60.751. A closure report shall be submitted to the appropriate AQD District Office as provided in 40 CFR 60.757(d). ~~(40 CFR 60.752(b)(2)(v)(A), 40 CFR 63.1955(a)(1))~~
 - b. The collection and control system shall have been in operation a minimum of 15 years. ~~(40 CFR 60.752(b)(2)(v)(B), 40 CFR 63.1955(a)(1))~~
 - c. Following the procedures specified in 40 CFR 60.754(b), the calculated NMOC gas produced by the landfill shall be less than 50 megagrams per year on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart. ~~(40 CFR 60.752(b)(2)(v)(C), 40 CFR 63.1955(a)(1))~~
2. The permittee shall submit a closure report to the appropriate AQD District Office within 30 days of waste acceptance cessation. The AQD may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the AQD, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). ~~(40 CFR 60.757(d), 40 CFR 63.1955(a)(1))~~
3. If monitoring demonstrates that the operational requirements above in Special Condition V.1 are not met, corrective action shall be taken as specified above in Special Condition V.2. If corrective actions are taken as specified above in Special Condition V.2, the monitored exceedance is not a violation of the operational requirements in this section. ~~(40 CFR 60.753(g), 40 CFR 63.1955(a)(1))~~
4. For the approval of collection and control systems that includes any alternatives to the operational standards, test methods, procedures, compliance measures, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions, the permittee shall follow the procedures in 40 CFR 60.752(b)(2). ~~(40 CFR 63.1955(c))~~
5. The permittee shall comply with the requirements of 40 CFR Part 60, Subpart WWW. ~~(40 CFR 63.1955(a)(1))~~
6. The permittee shall comply with the requirements of 40 CFR Part 63, Subpart AAAA, including the general provisions specified in Table 1 and the SSM requirements in 40 CFR 63.6. ~~(40 CFR 63.1955, 40 CFR 63.6)~~
7. The permittee is no longer required to comply with the requirements of Subpart AAAA of Part 63 when it is no longer required to apply controls as specified in 40 CFR 60.752(b)(2)(v) of Subpart WWW. ~~(40 CFR 63.1950)~~

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

Section 1 – Smiths Creek Landfill

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Expiration Date: June 7, 2023
PTI No: MI-PTI-N6207-2018

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EU-ACTIVECOLL EU-ALGCS-SCL1
EMISSION UNIT CONDITIONS

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EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replace this section with two sections (one for each regulation).

DESCRIPTION

EU-ALGCS-SCL1: This emission unit represents the active landfill gas collection system at the landfill. Gas moving equipment draws landfill gas from the wells and delivers it to an open flare.

Flexible Group ID: FG-LGCS-SCL1

POLLUTION CONTROL EQUIPMENT

An open flare which combusts landfill gas at active landfill when not burned in SI-RICE engines for electric power generation.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- In the 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 60.753(e), 40 CFR 63.1955(a))**
- The permittee shall operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:
 - Five years or more if active; or **(40 CFR 60.753(a)(1), 40 CFR 63.1955(a))**
 - Two years or more if closed or at final grade **(40 CFR 60.753(a)(2), 40 CFR 63.1955(a))**
- The permittee shall operate the collection system with negative pressure at each wellhead except under the following conditions: **(40 CFR 60.753(b), 40 CFR 63.1955(a))**
 - A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided below (Special Condition VII.4). **(40 CFR 60.753(b)(1), 40 CFR 63.1955(a))**
 - Use of a geo-membrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan. **(40 CFR 60.753(b)(2), 40 CFR 63.1955(a))**
 - A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes shall be approved by the AQD. **(40 CFR 60.753(b)(3), 40 CFR 63.1955(a))**

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4. The permittee shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55 °C and with a nitrogen level less than 20 percent or an oxygen level less than five percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. **(40 CFR 60.753(c), 40 CFR 63.1955(a))**

5. The permittee shall operate the installed collection system to comply with the provisions in 40 CFR 60.753, 40 CFR 60.755, and 40 CFR 60.756. **(40 CFR 60.752(b)(2)(iv), 40 CFR 63.1955(a))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. An active collection system shall:

- a. Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment. **(40 CFR 60.752(b)(2)(ii)(A)(1), 40 CFR 63.1955(a))**
- b. Be designed per the specifications in 40 CFR 60.752(b)(2)(i). Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of five years or more if active; or two years or more if closed at final grade. **(40 CFR 60.755(b), 40 CFR 60.752(b)(2)(ii)(A)(2), 40 CFR 63.1955(a))**
- c. Collect gas at a sufficient extraction rate. **(40 CFR 60.752(b)(2)(ii)(A)(3), 40 CFR 63.1955(a))**
- d. Be designed to minimize off-site migration of subsurface gas. **(40 CFR 60.752(b)(2)(ii)(A)(4), 40 CFR 63.1955(a))**

2. The permittee shall design the collection system so that all collected gases are vented to a control system designed and operated in compliance with 40 CFR 60.752(b)(2)(iii). **(40 CFR 60.753(e), 40 CFR 63.1955(a))**

3. When adding gas collectors to the active gas collection system, a sufficient density of gas collectors shall be installed in compliance as specified above (Special Condition IV.1). The permittee shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the appropriate AQD District Office, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards in NSPS VVVV. **(40 CFR 60.755(a)(2), 40 CFR 63.1955(a))**

- a. If the permittee is seeking to demonstrate compliance through the use of a collection system not conforming to the specifications provided in 40 CFR 60.759, then the permittee shall provide information that satisfies the AQD District Supervisor as specified in 40 CFR 60.752(b)(2)(i)(C), demonstrating that off-site migration is being controlled. **(40 CFR 60.755(a)(6), 40 CFR 63.1955(a))**

4. The permittee shall install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead. **(40 CFR 60.756(a), 40 CFR 63.1955(a))**

5. The permittee shall site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the appropriate AQD District Supervisor as provided in 40 CFR 60.752(b)(2)(i)(C) and (D):

- a. The collection devices within the interior and along the perimeter areas shall be certified, by a professional engineer, to achieve comprehensive control of surface gas emissions. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat. **(40 CFR 60.759(a)(1), 40 CFR 63.1955(a))**
- b. The sufficient density of gas collection devices determined above in Special Condition IV.5.a shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior. **(40 CFR 60.759(a)(2), 40 CFR 63.1955(a))**
- c. The placement of gas collection devices determined above in Special Condition IV.5.a shall control all gas producing areas, except as provided below in Special Conditions IV.5.c.i and ii. **(40 CFR 60.759(a)(3), 40 CFR 63.1955(a))**

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- i. Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the District Supervisor upon request. ~~(40 CFR 60.759(a)(3)(i), 40 CFR 63.1955(a))~~
 - ii. Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the AQD District Supervisor upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the equation in Appendix 7-1. ~~(40 CFR 60.759(a)(3)(ii), 40 CFR 63.1955(a)). See Appendix 7-1~~
6. The permittee shall construct the gas collection devices using the following equipment or procedures:
- a. The landfill gas extraction components shall be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system shall extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration. ~~(40 CFR 60.759(b)(1), 40 CFR 63.1955(a))~~
 - b. Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations. ~~(40 CFR 60.759(b)(2), 40 CFR 63.1955(a))~~
 - c. Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly shall include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness. ~~(40 CFR 60.759(b)(3), 40 CFR 63.1955(a))~~
7. The active gas collection system shall be designed convey the landfill gas to a control system in compliance with 40 CFR 60.752(b)(2)(iii) through the collection header pipe(s). The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures: ~~(40 CFR 60.759(c), 40 CFR 63.1955(a))~~
- a. For existing collection systems, the flow data shall be used to project the maximum flow rate. If no flow data exists, the procedures in 40 CFR 60.759(c)(2) shall be used. ~~(40 CFR 60.759(c)(1), 40 CFR 63.1955(a))~~
 - b. For new collection systems, the maximum flow rate shall be in accordance with 40 CFR 60.755(a)(1). ~~(40 CFR 60.759(c)(2), 40 CFR 63.1955(a))~~

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

1. For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(3), the permittee shall measure gauge pressure in the gas collection header at each individual well, monthly. If a positive pressure exists, action shall be initiated to correct the exceedance within five calendar days, except for the three conditions allowed under 40 CFR 60.753(b) (Special Conditions III.3.a-c). If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120

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~~days of the initial measurement of positive pressure. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the AQD for approval. (40 CFR 60.755(a)(3), 40 CFR 60.756(a)(1), 40 CFR 63.1955(a))~~

- ~~a. If monitoring demonstrates that the negative pressure is not being met, then corrective action shall be taken as noted in 40 CFR 60.755(a)(3) (Special Condition VI.1.). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements. (40 CFR 60.753(g), 40 CFR 63.1955(a))~~
- ~~2. The permittee is not required to expand the gas collection system as required in 40 CFR 60.755(a)(3) (Special Condition VI.1) during the first 180 days after gas collection system startup. (40 CFR 60.755(a)(4), 40 CFR 63.1955(a))~~
- ~~3. For the purpose of identifying whether excess air infiltration into the landfill is occurring, the permittee shall monitor each well monthly for temperature and oxygen as provided in 40 CFR 60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within five calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the AQD for approval. (40 CFR 60.755(a)(5), 40 CFR 60.756(a)(2), 40 CFR 60.756(a)(3), 40 CFR 63.1955(a))~~
 - ~~a. If monitoring demonstrates that the temperature and oxygen levels are not being met, then corrective action shall be taken as noted above and specified in 40 CFR 60.755(a)(5). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements. (40 CFR 60.753(g), 40 CFR 63.1955(a))~~
 - ~~b. Unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i), the oxygen shall be determined by an oxygen meter using Method 3A or 3C except that:
 - ~~i. The span shall be set so that the regulatory limit is between 20 and 50 percent of the span; (40 CFR 60.753(c)(i), 40 CFR 63.1955(a))~~
 - ~~ii. A data recorder is not required. (40 CFR 60.753(c)(ii), 40 CFR 63.1955(a))~~
 - ~~iii. Only two calibration gases are required, a zero and span, and ambient air may be used as the span. (40 CFR 60.753(c)(iii), 40 CFR 63.1955(a))~~
 - ~~iv. A calibration error check is not required. (40 CFR 60.753(c)(iv), 40 CFR 63.1955(a))~~
 - ~~v. The allowable sample bias, zero drift, and calibration drift are ± 10 percent. (40 CFR 60.753(c)(v), 40 CFR 63.1955(a))~~~~
- ~~4. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in 40 CFR 60.758(b)(1) (Special Condition VI.4.a-b) as measured during the compliance determination. Records of the control device vendor specifications shall be maintained until removal.
 - ~~a. The maximum expected gas generation flow rate as calculated in 40 CFR 60.755(a)(1). The permittee may use another method to determine the maximum gas generation flow rate, if the method has been approved by the appropriate AQD District Office. (40 CFR 60.758(b)(1)(i), 40 CFR 63.1955(a))~~
 - ~~b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 60.759(a)(1). (40 CFR 60.758(b)(1)(ii), 40 CFR 63.1955(a))~~~~
- ~~5. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector; and the installation date and location of all newly installed collectors as specified under 40 CFR 60.755(b) (Special Condition IV.1.b). (40 CFR 60.758(d), 40 CFR 60.758(d)(1), 40 CFR 63.1955(a))~~
- ~~6. The permittee shall keep readily accessible records of all collection and control system exceedances of the operational standards in 40 CFR 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance. (40 CFR 60.758(e), 40 CFR 63.1955(a))~~

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7. The permittee shall maintain the following information:
- a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion. ~~(40 CFR 60.757(g)(1), 40 CFR 63.1955(a))~~
 - b. The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based. ~~(40 CFR 60.757(g)(2), 40 CFR 63.1955(a))~~
 - c. The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. ~~(40 CFR 60.757(g)(3), 40 CFR 63.1955(a))~~
 - d. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. ~~(40 CFR 60.757(g)(4), 40 CFR 63.1955(a))~~
 - e. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. ~~(40 CFR 60.757(g)(5), 40 CFR 63.1955(a))~~
 - f. The provisions for the control of off-site migration. ~~(40 CFR 60.757(g)(6), 40 CFR 63.1955(a))~~
 - g. The permittee shall maintain the dates of the landfill gas well installations, the age of the waste in which the landfill gas wells were installed, and the age of the in-place waste for each portion of the landfill. ~~(R 336.1213(3))~~

VII. REPORTING

- 1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. ~~(R 336.1213(3)(c)(ii))~~
- 2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. ~~(R 336.1213(3)(c)(i))~~
- 3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be received by appropriate AQD district office by March 15 for the previous calendar year. ~~(R 336.1213(4)(e))~~
- 4. The permittee shall submit to the appropriate AQD district office semi-annual reports for the gas collection system. Reports shall be received by the appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. For enclosed combustion devices and flares, reportable exceedances are defined under 40 CFR 60.758(e). The semi-annual reports for the gas collection system shall include the following information: ~~(40 CFR 60.757(f), 40 CFR 63.1980(a), 40 CFR 63.1955(a), 40 CFR 63.1965)~~
 - a. Value and length of time for exceedance of applicable parameters monitored above in Special Conditions VI.1 and VI.3. ~~(40 CFR 60.757(f)(1))~~
 - b. All periods when the collection system was not operating in excess of five days. ~~(40 CFR 60.757(f)(4))~~
 - c. The date of installation and the location of each well or collection system expansion added pursuant to Special Conditions IV.1.b, VI.1, and VI.3. ~~(40 CFR 60.757(f)(6))~~
 - d. Any deviations as listed in 40 CFR 63.1965. ~~(40 CFR 63.1965)~~
 - e. The permittee shall record instances when a positive pressure occurs in efforts to avoid fire. ~~(40 CFR 60.753(b)(1))~~
- 5. The permittee shall submit a startup, shutdown, and malfunction (SSM) report to the appropriate district office. It shall be delivered or postmarked by March 15 for the reporting period of July 1 through December 31 of the previous calendar year and by September 15 for the reporting period of January 1 through June 30 of the same year.

See Appendix 8-1

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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 Dimensions (inches)	Minimum Height Above-Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. If monitoring demonstrates that the operational requirements above in Special Conditions III.3 through III.5 are not met, corrective action shall be taken as specified above in Special Conditions VI.1 and VI.3. If corrective actions are taken as specified above in Special Conditions VI.1 and VI.3, the monitored exceedance is not a violation of the operational requirements in Special Conditions III.3 through III.5. **(40 CFR 60.753(g), 40 CFR 63.1955(a))**
2. The above provisions in Special Conditions IV.1.b, VI.1 and VI.3 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 five days for collection systems. **(40 CFR 60.755(e), 40 CFR 63.1955(a))**
3. If the permittee is seeking to install a collection system that does not meet the specifications above in Special Conditions IV.5, IV.6, and IV.7, or is seeking to monitor alternative parameters to those required by 40 CFR 60.753 through 40 CFR 60.756, they shall provide information satisfactory to the appropriate AQD District Office as provided in 40 CFR 60.752(b)(2)(i)(B) and (C) describing the design and operation of the collection system; the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The AQD may specify additional appropriate monitoring procedures. **(40 CFR 60.756(e), 40 CFR 63.1955(a))**
4. The permittee shall have developed and implemented a written SSM plan according to the provision in 40 CFR 63.6(e)(3) for EU-ALGCS-SCL1. A copy of the SSM plan shall be maintained on site. **(40 CFR 63.1960)**
5. The active landfill gas collection system shall also comply with all applicable requirements listed under FG-LGCS-SCL1 in Table D of this renewable operating permit. **(R 336.1213(3))**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**EU-OPENFLARE-SCL1
 EMISSION UNIT CONDITIONS**

EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replace this section with two sections (one for each regulation).

DESCRIPTION

EU-OPENFLARE-SCL1: The flare is a combustor without enclosure or shroud. The initial performance testing for the open flare has already been performed (March 18, 2003, Derenzo and Associates, Inc. [Project No. 0301056, April 04, 2003]) and therefore, the test is not required by this table.

Flexible Group ID: FG-CONTROLS-SCL1

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- The permittee shall operate the flare in accordance with 40 CFR 60.18 except as noted in 40 CFR 60.754(e), **(40 CFR 60.752(b)(2)(iii)(A), 40 CFR 63.1955(a))**
- The permittee shall operate the flare at all times when the collected gas is routed to it. **(40 CFR 60.753(f), 40 CFR 63.1955(a))**
- The flare shall be operated with no visible emissions, as determined by the methods specified in 40 CFR 60.18(f), except for periods not to exceed a total of five minutes during any two consecutive hours. **(40 CFR 60.18(c)(1))**
- The flare shall be operated 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))**
- The flare shall be used only with the net heating value of the gas being combusted of 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted of 7.45 MJ/scm (200 Btu/scf) or greater if the flare is non-assisted. The net heating value of the gas being combusted shall be determined by the methods specified in 40 CFR 60.18(f). **(40 CFR 60.18(c)(3))**

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6. Steam-assisted and 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. Steam-assisted and 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. Steam-assisted and 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))**
7. Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, V_{max} , as determined by the method specified in 40 CFR 60.18(f)(6). **(40 CFR 60.18(c)(5))**
8. Flares used to comply with provisions of 40 CFR Part 60, Subpart A shall be operated at all times when emissions may be vented to them. **(40 CFR 60.18(e))**
9. The permittee shall operate control system such that all collected gases are vented to a control system designed and operated in accordance with 40 CFR 60.752(b)(2)(iii). In the 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 shall contributing to venting of the gas to the atmosphere shall be closed within one hour. **(40 CFR 60.753(e), 40 CFR 63.1955(a))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain, and operate, according to the manufacturer's specifications a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. **(40 CFR 60.756(c)(1), 40 CFR 63.1955(a))**
2. A device that records flow to or bypass of the flare. The owner or operator shall either: **(40 CFR 60.756(c)(2), 40 CFR 63.1955(a))**
- a. Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or
- b. Secure the bypass line valve in the closed position with a car seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall install, calibrate, maintain, and operate according to the manufacturer's specifications, a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. **(40 CFR 60.756(c)(1), 40 CFR 63.1955(a))**
2. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep up-to-date, readily accessible records for the life of the open flare of the data listed in 40 CFR 60.758(b)(4) (Special Condition VI.3) as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of five years. Records of the open flare vendor specifications shall be maintained until removal. **(40 CFR 60.758(b), 40 CFR 63.1955(a))**
3. The permittee shall maintain records regarding the flare type (i.e., steam-assisted, air-assisted, or non-assisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit

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~~velocity determinations made during the performance test as specified in 40 CFR 60.18; continuous records of the open flare pilot flame or open flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent. (40 CFR 60.758(b)(4), 40 CFR 63.1955(a))~~

4. ~~Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 CFR 60.756 (Special Condition VI.1), as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. (40 CFR 60.758(c))~~
 - a. ~~The permittee shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device or the indication of bypass flow or records of monthly inspections of car seals or lock-and-key configurations used to seal bypass lines, specified under 40 CFR 60.756. (40 CFR 60.758(c)(2), 40 CFR 63.1955(a))~~
 - b. ~~The permittee shall keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under 40 CFR 60.756(c) (Special Condition VI.1.a), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent. (40 CFR 60.758(c)(4), 40 CFR 63.1955(a))~~
5. ~~The following records for the flare shall be maintained onsite:~~
 - a. ~~Records indicating presence of flare pilot flame. (40 CFR 60.18(f)(2))~~
 - b. ~~The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in Appendix 7-1. (40 CFR 60.18(f)(3))~~
 - c. ~~The actual exit velocity of the flare shall be calculated and recorded by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Federal Reference Test Methods 2, 2A, 2C, or 2D as appropriate, by the unobstructed (free) cross sectional area of the flare tip. (40 CFR 60.18(f)(4))~~
 - d. ~~The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in Appendix 7-1. (40 CFR 60.18(f)(5))~~
 - e. ~~The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in Appendix 7-1. (40 CFR 60.18(f)(6))~~

See Appendix 7-1

VII. REPORTING

1. ~~Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(iii))~~
2. ~~Semi-annual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))~~
3. ~~Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))~~
4. ~~The permittee shall submit to the appropriate AQD District Office semiannual reports for the gas collection system. Reports shall be received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. For enclosed combustion devices and flares, reportable exceedances are defined under 40 CFR 60.758(c). The semiannual report shall contain:~~
 - a. ~~Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(b). (40 CFR 60.757(f)(1), 40 CFR 63.1980(a), 40 CFR 63.1955(a))~~
 - 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. (40 CFR 60.757(f)(2), 40 CFR 63.1980(a), 40 CFR 63.1955(a))~~
 - c. ~~Description and duration of all periods when the control device was not operating for a period exceeding one hour and length of time the control device was not operating. (40 CFR 60.757(f)(3), 40 CFR 63.1980(a), 40 CFR 63.1955(a))~~

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5. The permittee shall submit an equipment removal report to the AQD 30 days prior to removal or cessation of operation of the open flare.
- a. The equipment removal report shall contain all of the following items:
- i. A copy of the closure report submitted in accordance with 40 CFR 60.757. ~~(40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a))~~
 - ii. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired. ~~(40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a))~~
 - iii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. ~~(40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a))~~
- b. Additional information may be requested as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. ~~(40 CFR 60.757(e)(2), 40 CFR 63.1955(a))~~
6. The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD District Office and it shall be delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. ~~(40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))~~

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of 40 CFR 60 Subparts A and WWW, Standard of Performance for Municipal Solid Waste Landfills as they apply to EU-OPENFLARE-SCL1. ~~(40 CFR 60 Subparts A and WWW)~~
2. The permittee shall comply with all applicable provisions of 40 CFR 63 Subparts A and AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as they apply to EU-OPENFLARE-SCL1. ~~(40 CFR 60 Subparts A and AAAA)~~
3. The duration of start-up, shutdown, or malfunction for the open flare shall not exceed one hour. ~~(40 CFR 60.755(e), 40 CFR 63.1955(a))~~
4. Compliance of 40 CFR Part 63, Part 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 in 40 CFR 60.756(c)(1) (Special Condition VI.1) are used to demonstrate compliance with the operating conditions for the open flare. The permittee shall have developed and implemented a written SSM for EU-OPENFLARE-SCL1. A copy of the SSM plan shall be maintained on site. ~~(40 CFR 63.1960)~~

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**EU-VENTFLARE-SCL4
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-VENTFLARE-SCL4: Consists of ~~sevensix~~ self-igniting (solar powered: Solar power charges 6-V batteries that produce sparks) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of ~~six~~ of the solar flares was performed on March 18, 2003, and, therefore, is not required by this table. Due to lack of gas generation, most flares are idle most of the times. When gas flow is detected by PLC, a flare lights up by a spark. The seventh flare became operational on September 21, 2022 and will be tested within 180 days of startup.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTIONS(S)

- Flares shall be designed for and operated with no visible emissions as determined by the methods specified in 40 CFR 60.18(f) ~~and 40 CFR 63.11(b)???????????~~, except for periods not to exceed a total of five minutes during any two consecutive hours. ~~(40 CFR 60.18(c)(1), 40 CFR 63.11(b)(4)40-CFR-60.752(b)(2)(iii)(A))~~
- Passive flares shall be operated with a battery to provide a spark to re-ignite the flare as long as landfill gas of sufficient quality and quantity is present to sustain combustion. ~~(40 CFR 60.18(c)(2), 40 CFR 63.11(b)(5)40-CFR 60.752(b)(2)(i), 40 CFR 63.1955(e), U.S. EPA Approved Final Control Plan, page 2)~~
- Passive flares shall be used only if the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater. The net heating value of the gas being combusted shall be determined by the methods specified in 40 CFR 60.18(f) ~~and 40 CFR 63.11(b).~~ ~~(40 CFR 60.18(c)(3), 40 CFR 63.1955(a), 40 CFR 63.1959(e)0.752(b)(2)(i), 40 CFR 63.1955(e), U.S. EPA Approved Final Control Plan, page 2)~~
- Passive flares used to comply with provisions of 40 CFR Part 60 Subpart A shall have their ignition systems operated at all times when emissions may be vented to them. ~~(40 CFR 60.18(e), 40 CFR 63.11(b)(3)40-CFR 60.752(b)(2)(iii)(A))~~
- The permittee shall operate and maintain the passive flares in accordance with the manufacturer's recommendations, including, but not limited to, conducting periodic relight testing. ~~(R 336.1213(3), 40 CFR 63.6(e), EPA Approved Final Control Plan, manufacturer information enclosure)~~

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IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Flares shall be designed and operated in accordance with 40 CFR 60.18, [40 CFR 63.11](#) and according to the U.S. EPA approved Final Control Plan. (~~40 CFR 63.1955(a), 40 CFR 63.1959(b)(2)(iii)(A), 40 CFR 60.752(b)(2)(i), 40 CFR 63.1959(e)5(e)~~, U.S. EPA Approved Final Control Plan)
2. The permittee shall install, calibrate, maintain, and operate the following equipment, associated with each passive flare, according to the manufacturer's specifications: (~~40 CFR 63.1961(c)0.756(e), 40 CFR 63.1955(a)~~, U.S. EPA Approved Final Control Plan, manufacturer information enclosure)
 - a. A battery and charging system, to provide spark to reignite the flare as long as landfill gas of sufficient quality and quantity is present to sustain combustion.
 - b. A thermocouple which indicates the presence of a flame.
3. The passive flares must be designed to meet the requirements of 40 CFR 60.18 with respect to exit velocities and visible emissions. The passive flare will be able to ignite and stay lit with a minimum of 30% methane. (~~40 CFR 60.752(b)(2)(i)~~, ~~40 CFR 63.1955(ae)~~, U.S. EPA Approved Final Control Plan, manufacturer information enclosure, page 5)
4. Flares used to comply with 40 CFR 60.18 shall be steam-assisted, air-assisted, or non-assisted. (~~40 CFR 60.18(c)(6), 40 CFR 63.11(b)(4), 40 CFR 60.752(b)(2)(iii)(A)~~)

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

1. Within 180 days after commencement of initial startup, the permittee must verify visible emissions from EUVENTFLARE, by testing at owner's expense, in accordance with Department requirements. Testing must be performed using approved USEPA Method 22 listed in 40 CFR 60, Appendix A. No less than 30 days prior to testing, the permittee must submit a complete test plan to the appropriate AQD District Office. The AQD must approve the final plan prior to testing. The permittee must submit a complete report of the test results to the appropriate AQD District Office within 60 days following the last date of the test. (R 336.1213(3), R 336.2001, R 336.2003, R 336.2004, 40 CFR 63.11(b)(4))

1. Within 180 days after commencement of initial startup, the permittee must verify the following:
 - a. The net heating value of the gas being combusted in the flare must be calculated and recorded using the equation provided in Appendix 7-1. (40 CFR 63.11(b)(6))
 - b. The exit velocity for steam-assisted, air-assisted, or non-assisted flares as determined by the methods provided in Appendix 7-1. (40 CFR 63.11(b)(7) and (8))

[See Appendix 7-1](#)

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Weekly inspections of spark plug performance of the non-assisted flares shall be completed and records shall be kept onsite. In the event of a spark plug failure, the permittee has five days to correct the malfunction. If the malfunction cannot be corrected within five days, a deviation will be reported during semiannual [NESHAPSSM](#) report.
2. The presence of a flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame. (~~40 CFR 60.18(f)(2), 40 CFR 63.11(b)(5)0.752(b)(2)(i), 40 CFR 63.1955(ae)~~, U.S. EPA Approved Final Control Plan, page 2)
3. The net heating value of the gas being combusted in a flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). (R 336.1213(3), 40 CFR 60.18(f)(3), 40 CFR ~~63.11(b)(6)0.752(b)(2)(iii)(A)~~)
OR

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The net heating value of gas being combusted in a flare will be determined using 40 CFR 60, Method 3C. (40 CFR ~~63.1959(e)0.752(b)(2)(i)~~, 40 CFR 63.1955(~~ae~~))

4. The maximum permitted velocity, Vmax, for flares complying with 40 CFR 60.18(c)(4)(iii) shall be determined and recorded using the equation provided in 40 CFR 60.18(f)(5). (R 336.1213(3), 40 CFR 60.18(f)(5), 40 CFR ~~63.11(b)(7)(iii)0.752(b)(2)(iii)(A)~~)
5. The permittee shall perform the following monitoring on a monthly basis: (40 CFR ~~63.1959(a)(2)(ii)(A)0.752(b)(2)(i)~~, 40 CFR 63.1955(~~ae~~))
 - a. Downloading of the data collected by the data logger.
 - b. Visual inspection of each flare to verify that components of the flare have not become damaged by weather conditions or vandalism.
6. The permittee shall monitor the flare to ensure that it is operated and maintained in conformance with its design and the provisions of 40 CFR Part 60 Subpart A, ~~40 CFR 62 Subpart OOO and 40 CFR 63 Subpart AAAA and 40 CFR Part 60 Subpart WWW~~. (40 CFR 60.18(d), 40 CFR ~~63.1959(a)(2)(ii)(A)0.752(b)(2)(iii)(A)~~)

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The vent flares shall also comply with all applicable requirements listed under [FGVENTLFLAREOOO & FGVENTFLAREAAAA FG-CONTROLS-SCL4](#) in Table D of this renewable operating permit. R 336.1213(3))

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**EU-BIOREACTOR-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-BIOREACTOR-SCL1: Represents the portion of the landfill that is expected to be operated as a bioreactor.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The bioreactor gas collection and control system shall be installed prior to the initiation of liquids addition. **(40 CFR 63.1947(c)(1))**
2. The gas collection and control system shall begin operating within 180 days after initiation of liquids or within 180 days of achieving a moisture content of 40 percent by weight, whichever is later. **(40 CFR 63.1947(c)(2))**
3. If the permittee chooses to calculate moisture content to demonstrate compliance with 40 CFR 63.1947(c)(2), the procedures delineated in 40 CFR 63.1908(g) and 40 CFR 63.1908(h) shall be used to determine when the moisture content within a bioreactor reaches 40 percent by weight. **(40 CFR 63.1947(c)(2))**
4. If a bioreactor is located at a MSW landfill that is not permanently closed and has a design capacity equal to or greater than 2.5 million Mg or 2.5 million m³, then it shall meet the requirements of 40 CFR 63.1955(a) and the requirements listed below:
 - a. The permittee must comply with 40 CFR 63.1955 starting on the date they are required to install the gas collection and control system ~~general provisions specified in Table 1 of 40 CFR Part 63 Subpart AAAA and 40 CFR 63.1960 through 40 CFR 63.1985 on the date the installation of the gas collection and control system is required.~~ **(40 CFR 63.1955(bd)(1))**
 - b. The permittee must extend ~~extension of~~ the collection and control system into each new cell or area of the bioreactor prior to initiating liquids addition ~~initiation of liquids~~ in that area ~~instead of the schedule in 40 CFR 60.752(b)(2)(iii)(A)(2).~~ **(40 CFR 63.1955(bd)(2))**
5. Beginning no later than September 28, 2021, the collection and control system design plan may include for approval collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions.

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[as provided in § 63.1981\(d\)\(2\).](#) The operator shall comply with the requirements of 40 CFR Part 60, Subpart ~~WWW.~~ (40 CFR 63.1955(a)(1))

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

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V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The owner or operator shall keep records as specified in 40 CFR [63.1983](#) and the general provisions of 40 CFR [63 Subpart A](#) as shown in Table 1 of 40 CFR Part 63 Subpart AAAA, Part 60, Subpart WWW or in the Federal plan or EPA approved state or tribal plan that implements 40 CFR Part 60, Subpart Cc, whichever applies. (40 CFR [63.1983\(a\)](#))
- ~~2. The owner or operator shall keep records and reports as specified in the general provisions of Table 1 of 40 CFR, Part 60, Subpart AAAA. (40 CFR [63.1980\(b\)](#))~~
3. If any liquids other than leachate are added in a controlled fashion to the waste mass and these liquids do not comply with the bioreactor requirements in 40 CFR 63.1947, 40 CFR 63.1955([be](#)), and 40 CFR 63.1982([ae](#)) and ([b](#)) through ([f](#)), then records of calculations shall be kept showing that the moisture by weight expected in the resulting waste mass is less than 40 percent. The calculation shall consider the waste mass, the moisture content of the incoming waste, the mass of water added to the waste including leachate recirculation and the addition of other liquids and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balance calculations may be used. The owner or operator shall document the calculations and provide the basis for any assumptions. A record of these calculations shall be kept until the cessation of liquid addition. (40 CFR [63.1982\(cg\)](#))
4. If an owner or operator calculates moisture content to establish the date on which the bioreactor is required to begin operating the collection and control system under 40 CFR 63.1947(a)(2) or (c)(2), a record of the calculations ~~including the information specified in 40 CFR 63.1947(g)~~ shall be maintained for five years. (40 CFR [63.1982\(eh\)](#)) NOTE TO EGLE: The phrase crossed out above said "including the information specified in paragraph (e) of this section (40 CFR 63.1982) – however, this section does not contain a paragraph "e". This is an error in the federal NESHAP regulations.
5. Monitoring shall be performed to comply with 40 CFR, Part ~~630~~, Subpart ~~AAAAWWW~~. (40 CFR [63 Subpart AAAA.1955\(a\)\(1\)](#))

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))
4. ~~Submit a semiannual report containing the information required in 40 CFR 63.1981(h)The annual report described in 40 CFR 60.757(f) shall be submitted~~ every six months. (40 CFR [63.1981\(ha\)](#))
5. For bioreactors at new affected sources, the initial semiannual compliance report and performance test results described in 40 CFR [63.1981\(h\)0-757\(f\)](#) shall be submitted within 180 days after the compliance date required

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to begin operating the gas collection and control system as specified by 40 CFR 63.1947(a)(2). **(40 CFR 63.19820(ae))**

6. If a semiannual compliance report is required to be submitted for a bioreactor and a conventional portion of the same landfill, the submittal of a subsequent semiannual compliance report for the bioreactor may be delayed in accordance with the following:
 - a. Until the date the initial or subsequent semiannual compliance report is due for the conventional portion of the landfill. **(40 CFR 63.19820(bf)(4))**
 - b. The delay of the submittal of the subsequent compliance report for the bioreactor shall be no more than 12 months after the due date for the submittal of the initial semiannual compliance report and performance test results described in 40 CFR 63.1981(h)0-757(f). The report shall cover the time period since the previous semiannual report for the bioreactor and cover a period of at least six months and no more than 12 months in duration. **(40 CFR 63.19820(bf)(2))**
 - c. After submittal of the delayed subsequent compliance report for the bioreactor, all subsequent semiannual reports shall be submitted every six months on the same due date as the semiannual report for the conventional portion of the landfill. **(40 CFR 63.19820(bf)(32))**
7. Within 90 days after the bioreactor achieves 40 percent moisture content by weight, the owner or operator shall report the results of the moisture content calculation, the date the bioreactor achieved 40 percent moisture content by weight, and the date which the collection and control system will be put into operation. [Beginning no later than September 27, 2021, the reports should be submitted following the procedure specified in § 63.1981\(l\)\(2\).](#) **(40 CFR 63.19820(dh))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The owner or operator of a landfill which includes a bioreactor is no longer required to comply with the requirements of this subpart provided either of the conditions below are met:
 - a. The landfill meets the control system removal criteria in 40 CFR 63.19500-752(b)(2)(v) of Part 60, Subpart ~~WWW~~ or the bioreactor meets the criteria for a nonproductive area of the landfill as specified in 40 CFR 63.1962(a)(3)(ii)60-759(a)(3)(ii) of Part 60, Subpart ~~WWW~~. **(40 CFR 63.1952(a))**
 - b. The bioreactor portion of the landfill is a closed landfill as defined in 40 CFR 63.19900-751, Subpart ~~WWW~~, liquid addition to the bioreactor has permanently ceased, and liquids have not been added to the bioreactor for at least one year. A closure report for the bioreactor shall be submitted to the appropriate AQD district office as stipulated in 40 CFR 63.1981(g)0-757(d) if all the above conditions are met. **(40 CFR 63.1952(b))**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

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²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**EU-ASBESTOS-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-ASBESTOS-SCL1: Any active or inactive asbestos disposal site. This landfill accepts asbestos waste.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. If the landfill accepts asbestos-containing waste materials from a source covered under 40 CFR 61.149, 40 CFR 61.150, or 40 CFR 61.155, the permittee shall meet the following operational requirements:
 - a. Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of 40 CFR 61.154(c) or (d) must be met. **(40 CFR 61.154(a))**
 - b. Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of 40 CFR 61.154(c)(1) must be met. **(40 CFR 61.154(b))**
 - i. Warning signs must be displayed at all entrances and at intervals of 100 m (330 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:
 - (1) Be posted in such a manner and location that a person can easily read the legend. **(40 CFR 61.154(b)(1)(i))**
 - (2) Conform to the requirements of 51 cm by 36cm (20 inches by 14 inches) upright format signs specified in 29 CFR 1910.145(d)(4) and 40 CFR 61.154(b)(1). **(40 CFR 61.154(b)(1)(ii))**
 - (3) The permittee shall display the legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in 40 CFR 61.154(b)(1). Spacing between any two lines must be at least equal to the height of the upper of the two lines. **(40 CFR 61.154(b)(1)(iii))**
 - ii. The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public. **(40 CFR 61.154(b)(2))**
 - iii. Upon request and supply of appropriate information, the appropriate AQD District Supervisor will determine whether a fence or a natural barrier adequately deters access by the general public. **(40 CFR 61.154(b)(3))**

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- c. Rather than meet the no visible emission requirement of 40 CFR 61.154(a), at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:
 - i. Be covered with at least 15 centimeters (6 inches) of compacted non-asbestos-containing material. **(40 CFR 61.154(c)(1))**, or
 - ii. Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the appropriate AQD District Supervisor. For purposes of 40 CFR 61.154(c)(2), any used, spent, or other waste oil is not considered a dust suppression agent. **(40 CFR 61.154(c)(2))**
 - d. Rather than meet the no visible emission requirement of 40 CFR 61.154(a), use an alternative emissions control method that has received prior written approval by the appropriate AQD District Supervisor according to the procedures described in 40 CFR 61.149(c)(2). **(40 CFR 61.154(d))**
2. The permittee shall comply with the requirements of 40 CFR 61.154. **(40 CFR 61.154)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The placement of gas collection devices determined in paragraph 40 CFR 60.759(a)(1) shall control all gas producing areas, except as provided by 40 CFR 60.759 (a)(3)(i) and (a)(3)(ii).
 - a. Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or non-degradable material deposited in the area, and shall be provided to the AQD upon request. **(40 CFR 60.759(a)(3)(i)) (40 CFR 60.759(a)(3))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For all asbestos-containing waste material received, the permittee of the active waste disposal site shall:
 - a. Maintain waste shipment records that include the following information: **(40 CFR 61.154(e)(1))**
 - i. The name, address, and telephone number of the waste generator. **(40 CFR 61.154(e)(1)(i))**
 - ii. The name, address, and telephone number of the transporter(s). **(40 CFR 61.154(e)(1)(ii))**
 - iii. The quantity of the asbestos-containing waste material in cubic meters (cubic yards). **(40 CFR 61.154(e)(1)(iii))**
 - iv. The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. Report in writing to the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the disposal site, by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report. **(40 CFR 61.154(e)(1)(iv))**
 - v. The date of the receipt. **(40 CFR 61.154(e)(1)(v))**
 - b. As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator. **(40 CFR 61.154(e)(2))**
 - c. Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record) **(40 CFR 61.154(e)(3))**

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2. The permittee shall maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area storage. **(40 CFR 61.154(f))**
3. The permittee shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or non-degradable waste excluded from collection as provided in 40 CFR 60.759(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in 40 CFR 60.759(a)(3)(ii). **(40 CFR 60.758(d)(2))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semi-annual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee shall submit to the appropriate AQD District Supervisor, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities. **(40 CFR 61.154(h))**
5. The permittee shall furnish upon request, and make available during normal business hours for inspection by the AQD, all records required by 40 CFR Part 61. **(40 CFR 61.154(i))**
6. Notify the AQD Technical Programs Unit and appropriate AQD District Office in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the appropriate AQD District Office at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:
 - a. Scheduled starting and completion dates. **(40 CFR 61.154(j)(1))**
 - b. Reason for disturbing the waste. **(40 CFR 61.154(j)(2))**
 - c. Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the AQD may require changes in the emission control procedures to be used. **(40 CFR 61.154(j)(3))**
 - d. Location of any temporary storage site and the final disposal site. **(40 CFR 61.154(j)(4))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

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IX. OTHER REQUIREMENT(S)

NA

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FG-LGCS-SCL1 FGACTIVECOLL-AAAA FGPASSIVECOLL-AAAA FGACTIVECOLL-OOO FGPASSIVECOLL-OOO	The landfill gas collection systems (active and passive) operated at the landfill.	EU-ALGCS-SCL1 (Active) EU-PLGCS-SCL1 (Passive) EUACTIVECOLL & EUPASSIVECOLL
FG-CONTROLS-SCL1 FGOPENFLAREOOO FGOPENFLAREAAAA FGVENTLFLAREOOO & FGVENTLFLAREAAAA	The control equipment operated at the landfill (both active and passive). One (1) open flare (Active Landfill) and seven (7) ^{six (6)} self-igniting solar flares (Passive Landfill)	EU-OPENFLARE-SCL1 EU-VENTFLARE-SCL1
FG-EMERGENS-SCL1	Emergency engines subject to 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. New/Reconstructed emergency engines greater than 0 HP but less than 500 130 ordered on or after June 12, 2006, and manufactured after January 1, 2009	EU-GENERAC-28HP-NG (Generac) EU-KOHLER-18HP-NG (Kohler)

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FG-ACTIVECOLL-OOO, FGPASSIVECOLL-AAAA, FG-ACTIVECOLL-OOO & FGPASSIVECOLL-AAAA/LGCS-SCL1
FLEXIBLE GROUP CONDITIONS

[EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace the now-obsolete Landfill NSPS \(40 CFR 60 Subpart WWWW\). See templates provided in this application, which replace this section with two sections \(one for each regulation\).](#)

DESCRIPTION

~~FG-ACTIVECOLL-OOO, FG-PASSIVECOLL-OOO, FG-ACTIVECOLL-AAAA, FGPASSIVECOLL-AAAA/LGCS-SCL1~~: The landfill gas collection systems (active and passive) operated at the landfill.

~~Emission Units: EU-ACTIVECOLL/LGCS-SCL1 (active) and EU-PASSIVECOLL/PLGCS-SCL1 (passive)~~

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POLLUTION CONTROL EQUIPMENT

One (1) open flare ~~and one self-igniting solar flare serving the active portion of the landfill~~ serving the active portion of the landfill and ~~six (6) six (6)~~ self-igniting solar flares serving the closed portion of the landfill. The solar flares were approved by the United States Environmental Protection Agency.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time-Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time-Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- ~~1. Except as described below, the permittee shall operate each interior wellhead in the landfill gas collection system with a nitrogen level less than 20 percent or an oxygen level less than five percent. The permittee may establish a higher nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. Upon completion of the horizontal collection system the permittee shall monitor temperature. (40 CFR 60.753(e), 40 CFR 63.1955(a))~~
- ~~2. Except as described below, 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 the 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 60.753(e), 40 CFR 63.1955(a))~~
 - ~~a. For the passive gas collection system, as approved by U.S. EPA, the requirement to close valves within one hour in the event of control device malfunction is satisfied by following the vent flare manufacturer's specified maintenance and test procedures. (40 CFR 60.753(e), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a) and (c))~~

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3. Except as described below, the permittee shall operate a control or treatment system at all times when the collected gas is routed to the system. ~~(40 CFR 60.753(f), 40 CFR 63.1955(a))~~
- a. For the passive gas collection system, as approved by U.S. EPA, the requirement to operate the vent flare at all times when the collected gas is routed to it is satisfied by the continuous ignition system and following the vent flare manufacturer's specified maintenance and test procedures. ~~(40 CFR 60.753(e), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a) and (c))~~
4. If monitoring demonstrates that the operational requirement in 40 CFR 60.753(b), (c), or (d) are not met, corrective action shall be taken as specified in 40 CFR 60.755(a)(3) through (5) or 40 CFR 60.755(c). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements in this section and is not considered to be a RO Permit deviation as specified in General Requirement 23, 24, 28 or 29 of Part A. ~~(40 CFR 60.753(g), 40 CFR 63.1955(a))~~

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. A **passive** gas collection system shall comply with the following:
- a. The provisions specified in 40 CFR 60.752(b)(2)(ii)(A)(1), (2), and (4). ~~(40 CFR 60.752(b)(2)(ii)(B)(1), 40 CFR 63.1955(a))~~
- b. The U.S. EPA Final Control Plan. ~~(40 CFR 60.752(b)(2)(i)(C), 40 CFR 63.1955(c), U.S. EPA approved Final Control Plan)~~
2. For the purposes of determining sufficient density of gas collectors for compliance with 40 CFR 60.752(b)(2)(ii)(A)(2), the permittee shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the AQD, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards. ~~(40 CFR 60.755(a)(2), 40 CFR 63.1955(a))~~
3. The permittee is not required to expand the landfill gas collection system as required in 40 CFR 60.755(a)(3) during the first 180 days after landfill gas collection system start-up. ~~(40 CFR 60.755(a)(4), 40 CFR 63.1955(a))~~
4. The permittee may seek to demonstrate compliance with 40 CFR 60.752(b)(2)(ii)(A)(4) through the use of a landfill gas collection system not conforming to the specifications provided in 40 CFR 60.759 by providing information satisfactory to the AQD as specified in 40 CFR 60.752(b)(2)(i)(C) demonstrating that off-site migration is being controlled. ~~(40 CFR 60.755(a)(6), 40 CFR 63.1955(a))~~
5. The permittee may seek to install a landfill gas collection system that does not meet the specifications in 40 CFR 60.759 or may seek to monitor alternative parameters to those required by 40 CFR 60.753 through 40 CFR 60.756 by providing information satisfactory to the AQD as provided in 40 CFR 60.752(b)(2)(B) and (C) describing the design and operation of the alternate landfill gas collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. ~~(40 CFR 60.756(e), 40 CFR 63.1955(a))~~
6. For purposes of compliance with 40 CFR 60.753(a), the permittee shall place each well or design component as specified in the approved design plan as provided in 40 CFR 60.752(b)(2)(i). Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of: ~~(40 CFR 60.755(b), 40 CFR 63.1955(a))~~
- a. Five years or more if active. ~~(40 CFR 60.755(b)(1), 40 CFR 63.1955(a))~~
- b. Two years or more if closed or at final grade. ~~(40 CFR 60.755(b)(2), 40 CFR 63.1955(a))~~

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(iii))~~

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(iii))~~

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1. ~~The permittee shall monitor the nitrogen level of the landfill gas using Method 3A or 3C of appendix A of 40 CFR Part 60, unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i). (40 CFR 60.753(c)(1), 40 CFR 63.1955(a))~~
~~OR~~
~~The permittee shall monitor the oxygen level of the landfill gas using an oxygen meter as provided in Method 3A or 3C of appendix A of 40 CFR Part 60, except if: (40 CFR 60.753(c)(2), 40 CFR 63.1955(a))~~
 - a. ~~The span shall be set so that the regulatory limit is between 20 and 50 percent of the span. (40 CFR 60.753(c)(2)(i), 40 CFR 63.1955(a))~~
 - b. ~~A data recorder is not required. (40 CFR 60.753(c)(2)(ii), 40 CFR 63.1955(a))~~
 - c. ~~Only two calibration gases are required, a zero and span, and ambient air may be used as the span. (40 CFR 60.753(c)(2)(iii), 40 CFR 63.1955(a))~~
 - d. ~~A calibration error check is not required. (40 CFR 60.753(c)(2)(iv), 40 CFR 63.1955(a))~~
 - e. ~~The allowable sample bias, zero drift, and calibration drift are plus or minus 10 percent. (40 CFR 60.753(c)(2)(v), 40 CFR 63.1955(a))~~
 - f. ~~An alternative test method may be established as allowed by 40 CFR 60.752(b)(2)(i). (40 CFR 60.753(c)(2), 40 CFR 63.1955(a))~~
2. ~~For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(1), the permittee shall use the equations provided in 40 CFR 60.755(a)(1)(i) or (ii). The k and L₀ kinetic factors should be those published the most recent Compilation Air Pollutant Emission Factors (AP-42) or other site-specific values demonstrated to be appropriate and approved by the AQD. If k has determined as specified in 40 CFR 60.754(a)(4), the value of k determined from the test shall be used. A value of no more than 15 years shall be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure. (40 CFR 60.755(a)(1), 40 CFR 63.1955(a))~~
 - a. ~~If a landfill gas collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, the equations in 40 CFR 60.755(a)(1)(i) and (ii). If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using the equations in 40 CFR 60.755(a)(1)(i) or (ii) or other methods shall be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment. (40 CFR 60.755(a)(1)(iii), 40 CFR 63.1955(a))~~
3. ~~For the purpose of identifying whether excess air infiltration into the landfill is occurring, the permittee shall monitor each well monthly for temperature and nitrogen or oxygen as provided in 40 CFR 60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within five calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the landfill gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternate timeline for correcting exceedances may be submitted to the AQD for approval. Upon completion of the horizontal collection system, oxygen (or nitrogen), temperature, and vacuum will be monitored. (40 CFR 60.755(a)(5), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(c))~~
4. ~~Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep the following records:~~
 - a. ~~A plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector shall be kept on file for the life of the collection system. (40 CFR 60.758(d), 40 CFR 63.1955(a))~~
 - b. ~~The installation date and location of all newly installed collectors as specified under 40 CFR 60.755(b). (40 CFR 60.758(d)(1), 40 CFR 63.1955(a))~~
 - c. ~~Documentation of the nature, date of deposition, amount, and location of asbestos-containing or non-degradable waste excluded from collection as provided in 40 CFR 40 CFR 60.759(a)(3)(i) as well as any non-productive areas excluded from collection as provided in 40 CFR 60.759(a)(3)(ii). (40 CFR 60.758(d)(2), 40 CFR 63.1955(a))~~
 - d. ~~Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for at least five years up-to-date, readily accessible records of all collection and control system exceedances of the operational standards in 40 CFR 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance. (40 CFR 60.758(e), 40 CFR 63.1955(a))~~

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See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. ~~(R 336.1213(3)(c)(ii))~~
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. ~~(R 336.1213(3)(c)(i))~~
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. ~~(R 336.1213(4)(e))~~

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above-Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the specified methods in 40 CFR 60.755(a)(1) through (a)(6) shall be used to determine whether the gas collection system is in compliance with 40 CFR 60.752(b)(2)(ii). ~~(40 CFR 60.755(a), 40 CFR 63.1955(a))~~
2. The permittee shall develop and implement a written startup, shutdown, and malfunction (SSM) plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site. Failure to develop, implement, or maintain a copy of the SSM plan is a deviation. ~~(40 CFR 63.1935(a)(3), 40 CFR 63.1945(b), 40 CFR 63.1960, 40 CFR 63.1965(c))~~

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).
²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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FG-OPENFLARE-000, FG-VENTFLARE-000, FGOPENFLARE-AAAA, FG-VENTFLARE-AAAAFG-CONTROLS-SCL1
FLEXIBLE GROUP CONDITIONS

EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart 000 to replace the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replace this section with two sections (one for each regulation)

DESCRIPTION

FG-OPENFLARE-000, FG-VENTFLARE-000, FGOPENFLARE-AAAA, FGVENTFLARE-AAAAFG-CONTROLS-SCL1: The control equipment operated at the landfill (both active and passive).

Emission Units: EU-OPENFLARE-SCL1, EU-VENTFLARE-SCL1

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POLLUTION CONTROL EQUIPMENT

One (1) open flare and one self-igniting solar flare (Active Landfill) and six (6) self-igniting solar flares (Passive Landfill).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time-Period/Operating Scenario	Equipment	Monitoring/Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time-Period/Operating Scenario	Equipment	Monitoring/Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The open flare shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in 40 CFR 60.756. ~~(40 CFR 60.752(b)(2)(iii)(B), 40 CFR 63.1955(a))~~

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The control system shall be designed and operated to reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at three percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test, except for open flares which shall be determined as specified in 40 CFR 60.18, to be completed no later than 180 days after the initial start-up of the approved control system using the test methods specified in 40 CFR 60.754(d). ~~(40 CFR 60.752(b)(2)(iii)(B), 40 CFR 63.1955(a))~~

2. The permittee may seek to demonstrate compliance with 40 CFR 60.752(b)(2)(iii) by using a control device other than an open flare or an enclosed combustor by providing information satisfactory to the AQD as provided in 40 CFR 60.752(b)(2)(i)(B) describing the operation of the alternate control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. ~~(40 CFR 60.756(d), 40 CFR 63.1955(a))~~

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V. TESTING/SAMPLING

~~Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))~~

NA

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VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep the following records for the life of the control system: **(40 CFR 60.758(b), 40 CFR 63.1955(a))**
 - a. The maximum expected gas generation flow rate as calculated in 40 CFR 60.755(a)(1). The permittee may use another method to determine the maximum gas generation flow rate, if the method has been approved by the AQD. **(40 CFR 60.758(b)(1)(i), 40 CFR 63.1955(a))**
 - b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 60.759(a)(1). **(40 CFR 60.758(b)(1)(ii), 40 CFR 63.1955(a))**
2. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for five years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 CFR 60.756 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. **(40 CFR 60.758(c), 40 CFR 63.1955(a))**

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(iii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If the landfill is closed, the permittee shall submit a closure report to the AQD with the first annual Emissions Guidelines Report. The AQD may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR §258.60. If a closure report has been submitted to the AQD, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). **(40 CFR 60.757(d), 40 CFR 63.1980(b), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(c))**
5. If the landfill is closed, the permittee shall submit an equipment removal report to the AQD 30 days prior to removal or cessation of operation of the control equipment. The equipment removal report shall contain all of the following items pursuant to 40 CFR 60.757(e)(1). **(40 CFR 60.757(e), 40 CFR 63.1955(a), 40 CFR 63.1980(b))**
 - a. A copy of the closure report submitted in accordance with 40 CFR 60.757(d). **(40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a))**
 - b. A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired. **(40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a))**
 - c. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. **(40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a))**

The AQD may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. **(40 CFR 60.757(e)(2), 40 CFR 63.1955(a))**
6. Within 60 days of the completion of the initial performance test, the permittee, in order to comply with 40 CFR 60.752(b)(2)(iii), shall submit the following information with the initial performance test report required under 40 CFR 60.8: **(R 336.1931(f), 40 CFR 60.757(g), 40 CFR 63.1955(a), 40 CFR 63.1980(b))**
 - a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded

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- from collection and the proposed sites for the future collection system expansion. ~~(40 CFR 60.757(g)(1), 40 CFR 63.1955(a))~~
- b. ~~The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based. (40 CFR 60.757(g)(2), 40 CFR 63.1955(a))~~
 - c. ~~The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. (40 CFR 60.757(g)(3), 40 CFR 63.1955(a))~~
 - d. ~~The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. (40 CFR 60.757(g)(4), 40 CFR 63.1955(a))~~
 - e. ~~The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. (40 CFR 60.757(g)(5), 40 CFR 63.1955(a))~~
 - f. ~~The provisions for the control of off-site migration. (40 CFR 60.757(g)(6), 40 CFR 63.1955(a))~~

See Appendix B-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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. ~~The permittee shall develop and implement a written startup, shutdown, and malfunction (SSM) plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site. Failure to develop, implement, or maintain a copy of the SSM plan is a deviation. (40 CFR 63.1935(a)(3), 40 CFR 63.1945(b), 40 CFR 63.1960))~~
2. ~~The permittee shall comply with the requirements in 40 CFR Part 63, Subpart AAAA, and 40 CFR 63.1960 through 63.1985. (40 CFR 63.1935(a)(3), 40 CFR 63.1955(b))~~
3. ~~The permittee shall calculate the three-hour block averages used to demonstrate compliance in the same way they are calculated in 40 CFR Part 60, Subpart WWW, except that the data collected during the events listed below are not to be included in any average computed under subpart AAAA: (40 CFR 63.1935(a)(3), 40 CFR 63.1975)~~
 - a. ~~Monitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments.~~
 - b. ~~Startups~~
 - c. ~~Shutdowns~~
 - d. ~~Malfunctions~~

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**FG-EMERGENS-SCL1
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION:

FG-EMERGENS-SCL1 (aka FG-NSPS JJJJ): Emergency engines subject to 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition (natural gas fired Spark Ignition) Internal Combustion Engines. Owners or operators of Emergency SI RICE are subject to this NSPS 4J if engine is manufactured after January 1, 2009. Emergency engines greater than 19 kW (25 HP) engine power are subject to emission rate standards.

1. Generac: Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22 kW - Natural Gas - 28 HP.
2. Kohler: Installed June 2013. Manufacture date is February 25, 2013. 14 kW - Natural Gas - 18 HP. Hence, Kohler (14 Kw / 18 HP < 19 kW / 25 HP) unit is not subject to NSPS 4J emissions standards.

Emission Units: EU-GENERAC-28HP-NG, EU-KOHLER-18HP-NG

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1. EU-GENERAC-28HP-NG (Generac): Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.
2. EU-KOHLER-18HP-NG (Kohler): Installed June 2013. Manufacture date is February 25, 2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.

POLLUTION CONTROL EQUIPMENT

Each engine is a certified engine with catalytic controls

I. EMISSION LIMIT

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO _x	10 g/HP-hr ^c	Hourly	Each engine in FG-EMERGENS- SCL1	SC VI.3 OR SC V.1	40 CFR 60.4233(e) (Table 1)
2. CO	387 g/HP-hr	Hourly	Each engine in FG-EMERGENS- SCL1	SC VI.3 OR SC V.1	40 CFR 60.4233(e) (Table 1)

^c The emission standards applicable to emergency engines between 25 HP and 130 HP are in terms of NOX + HC.

Note: No emission limit for engines ≤ 25 HP SI (NG) RICE

II. MATERIAL LIMITS

1. The permittee shall burn only natural gas in each engine in FG-EMERGENS-SCL1 except as allowed in 40 CFR 60.4243(e). Owners and operators of stationary SI natural gas fired engines may operate their engines using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but must keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the owners and operators are required to conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233. **(R 336.1201(3), 40 CFR 60.4243(e))**

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III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall comply with the emission standards specified in 40 CFR 60.4233(d), (Special Condition I.1 and I.2) by purchasing an engine certified to the emission standards in 40 CFR 60.4231(a) through (c), as applicable, for the same engine class and maximum engine power. **(40 CFR 60.4243(a))**
2. At all times, the permittee must operate and maintain any emergency stationary reciprocating internal combustion engine (RICE), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 60.4243(b))**
3. There is no time limit on the use of emergency stationary RICE in emergency situations. **(40 CFR 60.4243(d))**
4. The permittee may operate each engine in FG-EMERGENS-SCL1 for no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engines beyond 100 hours per calendar year. **(40 CFR 60.4243(d))**
5. Each engine in FG-EMERGENS-SCL1 may operate up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance and testing as provided in 40 CFR 60.4243(d)(1) through (d)(3). The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for the permittee to supply non-emergency power as part of a financial arrangement with another entity. **(40 CFR 60.4243(d))**
6. The permittee shall operate and maintain each engine in FG-EMERGENS-SCL1 such that it meets the emission limits in SC I.1 and SC I.2 over the entire life of the engine. **(40 CFR 60.4234)**
7. If the permittee purchased a certified engine, according to procedures specified in 40 CFR Part 60 Subpart JJJJ, for the same model year, the permittee shall meet the following requirements for each engine in FG-EMERGENS-SCL1:
 - a. Operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions.
 - b. Keep a maintenance plan and the permittee may only change those engine settings that are permitted by the manufacturer. If you do not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine.
 - c. Meet the requirements as specified in 40 CFR 1068 Subparts A through D, as applicable.

If the permittee does not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and be subject to testing to determine compliance with the emission limits. **(40 CFR 60.4243(b)(1) and (2))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall equip and maintain each engine in FG-EMERGENS-SCL1 with a non-resettable hours meter to track the operating hours. **(40 CFR 60.4237(b))**

V. TESTING/SAMPLING

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

1. If each engine in FG-EMERGENS-SCL1 is purchased as a certified engine but not installed, configured, operated, and maintained according to the manufacturer's emission-related written instructions, or the permittee changes emission-related settings in a way that is not permitted by the manufacturer, the permittee must demonstrate compliance as follows:

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- a. Conduct an initial performance test to demonstrate compliance with the applicable emission standards in 40 CFR 60.4233(e), within one year after each engine in FG-EMERGENS-SCL1 is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within one year after changing emission-related settings in a way that is not permitted by the manufacturer.
- b. If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4244.
- c. Conduct subsequent performance testing every 8,760 hours of engine operation or every three years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

If a performance test is required, no less than 30 days prior to testing, a complete test plan shall be submitted to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(40 CFR 60.8, 40 CFR 60.4243, 40 CFR 60.4244, 40 CFR 60.4245, 40 CFR Part 60 Subpart JJJJ)**

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall monitor and record the total hours of operation for each engine in FG-EMERGENS-SCL1 per calendar year, recorded through the non-resettable hours meter, in a manner acceptable to the District Supervisor, AQD. The permittee shall document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation. **(R 336.1205(1)(a), R 336.2803, R 336.2804, R 336.2810, 40 CFR 60.4243, 40 CFR 60.4245(b))**
2. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), R 336.2803, R 336.2804, 40 CFR 60.4243, 40 CFR 60.4245)**
3. The permittee shall keep, in a satisfactory manner, the following records for each engine in FG-EMERGENS-SCL1:
 - a. If certified: The permittee shall keep records of the documentation from the manufacturer that each engine in FG-EMERGENS-SCL1 is certified to meet the emission standards and information as required in 40 CFR Parts 90, 1048, 1054, and 1060, as applicable.
 - b. If non-certified: The permittee shall keep records of testing required in Special Condition V.1.

The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a), R 336.2803, R 336.2804, 40 CFR 60.4233(e), 40 CFR 60.4243, 40 CFR 60.4245(a))**

4. The permittee shall keep, in a satisfactory manner, the following records of maintenance activity for each engine in FG-EMERGENS-SCL1:
 - a. If certified: The permittee shall keep the manufacturer's emission-related written instructions and records demonstrating that each engine in FG-NSPS JJJJ has been maintained according to them, as specified in Special Condition III.8.
 - b. If non-certified: The permittee shall keep records of a maintenance plan, as required by 40 CFR 60.4243 and maintenance activities.

The permittee shall keep all records on file and make them available to the Department upon request. **(40 CFR 60.4243, 40 CFR 60.4245(a), 40 CFR Part 60 Subpart JJJJ)**

5. The permittee shall keep, in a satisfactory manner, either vendor emissions guarantees or the testing required by this Table, for each engine in FG-EMERGENS-SCL1. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a), R 336.2803, R 336.2804)**
6. If any engine in FG-EMERGENS-SCL1 does not meet the standards applicable to non-emergency engines for the applicable size and model year, then the permittee shall monitor and record the operation of each engine in FG-EMERGENS-SCL1 in emergency and non-emergency service that are recorded through the non-resettable

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hours meter, in a manner acceptable to the District Supervisor, AQD. The permittee shall document the time of operation of the engine and the reason the engine was in operation during that time. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) and (d), 40 CFR 60.4243, 40 CFR 60.4245(b))**

7. The permittee shall keep records of all notifications submitted to comply with 40 CFR Part 60 Subpart JJJJ, as required by this Table, and all documentation supporting any notification. **(40 CFR 60.4245(a))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

1. The permittee shall comply with the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subpart A and Subpart JJJJ, as they apply to FG-EMERGENS-SCL1. **(40 CFR Part 60 Subparts A and JJJJ)**
2. The permittee shall comply with the provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart ZZZZ, as they apply to FG-EMERGENS-SCL1, upon startup. **(40 CFR Part 63 Subparts A and ZZZZ)**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

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APPENDICES

Appendix 1-1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO _{2e}	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
EU	Emission Unit	gr	Grains
FG	Flexible Group	HAP	Hazardous Air Pollutant
GACS	Gallons of Applied Coating Solids	Hg	Mercury
GC	General Condition	hr	Hour
GHGs	Greenhouse Gases	HP	Horsepower
HVLP	High Volume Low Pressure*	H ₂ S	Hydrogen Sulfide
ID	Identification	kW	Kilowatt
IRSL	Initial Risk Screening Level	lb	Pound
ITSL	Initial Threshold Screening Level	m	Meter
LAER	Lowest Achievable Emission Rate	mg	Milligram
MACT	Maximum Achievable Control Technology	mm	Millimeter
MAERS	Michigan Air Emissions Reporting System	MM	Million
MAP	Malfunction Abatement Plan	MW	Megawatts
MDEQ	Michigan Department of Environmental Quality	NMOC	Non-methane Organic Compounds
MSDS	Material Safety Data Sheet	NO _x	Oxides of Nitrogen
NA	Not Applicable	ng	Nanogram
NAAQS	National Ambient Air Quality Standards	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM10	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSR	New Source Review	pph	Pounds per hour
PS	Performance Specification	ppm	Parts per million
PSD	Prevention of Significant Deterioration	ppmv	Parts per million by volume
PTE	Permanent Total Enclosure	ppmw	Parts per million by weight
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
		µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

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Appendix 2-1. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3-1. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4-1. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5-1. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6-1. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 1 (Smiths Creek). Therefore, this appendix is not applicable.

Appendix 7-1. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in EU-ALGCS-SCL1, EU-OPENFLARE-SCL1, and EU-VENTFLARE-SCL1.

Appendix 7. Emission Calculations

The permittee must use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FGACTIONCOLL-AAAA and FGOPENFLARE-AAAA for 40 CFR Part 63, Subpart AAAA.

Calculation used to determine NMOC emissions from any nonproductive area

The following must be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Department upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. (40 CFR 63.1962(a)(3)(ii))

The NMOC emissions from each section proposed for exclusion must be computed using Equation 7 (40 CFR 63.1962(a)(3)(ii)(A)):

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$$Q_i = 2 k L_o M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

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Where:

Q_i = NMOC emission rate from the i th section, Mg/yr

k = methane generation rate constant, year⁻¹

L_o = methane generation potential, m³/Mg solid waste

M_i = mass of the degradable solid waste in the i th section, Mg

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of non-methane organic compounds, ppmv

3.6×10^{-9} = conversion factor

If the permittee is proposing to exclude, or cease gas collection and control from, nonproductive physically separated (e.g., separately lined) closed areas that already have gas collection systems, NMOC emissions from each physically separated closed area must be computed using either Equation 3 in 40 CFR 63.1959(c) or Equation 7 in 40 CFR 63.1962(a)(3)(ii)(A). **(40 CFR 63.1962(a)(3)(ii)(B))**

The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_o and C_{NMOC} provided in 40 CFR 63.1959(a)(1) or the alternative values from 40 CFR 63.1959(a)(5) must be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 63.1962(a)(3)(i). **(40 CFR 63.1962(a)(3)(iii))**

Net Heating Value of the gas being combusted in the flare:

The permittee has the choice of adhering to the heat content specifications in 40 CFR 63.11(b)(6)(ii) (equations below), and the maximum tip velocity specifications in 40 CFR 63.11(b)(7) or (b)(8), or adhering to the requirements in 40 CFR 63.11(b)(6)(i). **(40 CFR 63.11(b)(6))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

H_T = Net heating value of the sample,

MJ/scm; where the net enthalpy per mole of off gas is based on combustion at 25°C and 760 mmHg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \text{Constant } (1.740 \times 10^{-7}) \left(\frac{1}{\text{ppm}} \right) \left(\frac{\text{g mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

Where the standard temperature for $\left(\frac{\text{g mole}}{\text{scm}} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 63.14); and

H_i = Net heat of combustion of sample component i , kcal/g mole at 25°C and 760 mmHg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 (incorporated by reference as specified in 40 CFR 63.14) if published values are not available or cannot be calculated.

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Calculation for Vmax steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 63.11(b)(7)(i) must be calculated and recorded using the equation provided in 40 CFR 63.18(b)(7)(iii). **(40 CFR 63.18(b)(7)(iii))**

$$\text{Log}_{10}(V_{max}) = (H_T + 28.8)/31.7$$

Where:

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in 63.11(b)(6).

Calculation for Vmax for air-assisted flares

The maximum permitted velocity, V_{max} , for air-assisted flares must be calculated and recorded using the equation provided in 40 CFR 63.11(b)(8). **(40 CFR 63.11(b)(8))**

$$V_{max} = 8.71 + 0.708 (H_T)$$

Where:

V_{max} = Maximum permitted velocity, m/sec

8.71 = Constant

0.708 = Constant

H_T = The net heating value as determined in 63.11(b)(6)(ii).

4. Calculation used to determine NMOC emissions from any nonproductive area

The following shall be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the District Supervisor upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the following equation: **(40 CFR 60.759(a)(3)(ii), 40 CFR 63.1955(a))**

$$Q_i = 2 \cdot k \cdot L_0 \cdot M_i \cdot (e^{-kt_i}) \cdot (C_{NMOC}) \cdot (3.6 \times 10^{-9})$$

where:

Q_i = NMOC emission rate from the i th section, megagrams per year

k = methane generation rate constant, year⁻¹

L_0 = methane generation potential, cubic meters per megagram solid waste

M_i = mass of the degradable solid waste in the i th section, megagram

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of nonmethane organic compounds, parts per million by volume

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3.6×10^{-9} = conversion factor

The values for k and C_{NMOC} determined in field testing shall be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_0 and C_{NMOC} provided in 40 CFR 60.754(a)(1) or the alternative values from 40 CFR 60.754(a)(5) shall be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 60.759(a)(3)(i). **(40 CFR 60.759(a)(3)(iii), 40 CFR 63.1955(a))**

2. Net Heating Value of the gas being combusted in the flare:

The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). **(40 CFR 60.18(f)(3))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

where:

H_T = Net heating value of the sample;

MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \frac{\text{Constant}}{1.740 \times 10^{-7}} \left(\frac{1}{\text{ppm}} \right) \left(\frac{\text{g mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

where the standard temperature for $\left(\frac{\text{g mole}}{\text{scm}} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 60.17); and

H_i = Net heat of combustion of sample component i , kcal/g mole at 25°C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 or 88 or D4809-95 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

3. Calculation of V_{max} steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(5). **(40 CFR 60.18(f)(5))**

$$\log_{10}(V_{max}) = (H_T + 28.8) / 31.7$$

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined above

4. Calculation of V_{max} for air-assisted flares

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The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(6). ~~(40 CFR 60.18(f)(6))~~

$$V_{max} = 8.706 + 0.7084 (H_T)$$

V_{max} = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

H_T = The net heating value as determined above

Appendix 8-1. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

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SECTION 2 – Blue Water Renewables, LLC

A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**
- Those conditions that are hereby incorporated in a state-only enforceable Source-Wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R 336.1214a(5))**
- Those conditions that are hereby incorporated in a federally enforceable Source-Wide PTI pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

4. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as "state-only" are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**
5. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**
6. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee's own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**
9. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities: **(R 336.1213(1)(d))**
 - a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
 - c. Inspect, at reasonable times, any of the following:
 - i. Any stationary source.
 - ii. Any emission unit.
 - iii. Any equipment, including monitoring and air pollution control equipment.
 - iv. Any work practices or operations regulated or required under the ROP.
 - d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.
10. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq., and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

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11. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**
12. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**
13. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

10. Any 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).² **(R 336.1370)**
11. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

13. Unless otherwise specified in this ROP, the permittee shall comply with Rule 301, which states, in part, "Except as provided in subrules 2, 3, and 4 of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:"² **(R 336.1301(1))**
 - a. A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
 - b. A limit specified by an applicable federal new source performance standard.

The grading of visible emissions shall be determined in accordance with Rule 303.
14. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
 - a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.¹ **(R 336.1901(a))**
 - b. Unreasonable interference with the comfortable enjoyment of life and property.¹ **(R 336.1901(b))**

Testing/Sampling

16. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1).² **(R 336.2001)**
17. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**
18. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(5))**

Monitoring/Recordkeeping

18. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate. **(R 336.1213(3)(b))**
- The date, location, time, and method of sampling or measurements.
 - The dates the analyses of the samples were performed.
 - The company or entity that performed the analyses of the samples.
 - The analytical techniques or methods used.
 - The results of the analyses.
 - The related process operating conditions or parameters that existed at the time of sampling or measurement.
19. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

22. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a Responsible Official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**
23. A Responsible Official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507. **(R 336.1213(4)(c))**
24. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**
25. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP. **(R 336.1213(3)(c))**
- For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
 - For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
 - For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

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26. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following: **(R 336.1213(3)(c))**
- Submitting a certification by a Responsible Official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
 - Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a Responsible Official which states that; "based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete." The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.
27. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**
28. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**
29. 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 appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a Responsible Official in a manner consistent with the CAA.² **(R 336.1912)**

Permit Shield

27. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance, if either of the following provisions is satisfied. **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
- The applicable requirements are included and are specifically identified in the ROP.
 - The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.
- Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.
28. Nothing in this ROP shall alter or affect any of the following:
- The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
 - The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
 - The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**

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- e. The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**
- 29. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
 - f. Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
 - g. Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**
 - h. Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
 - i. Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
 - j. State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**
- 34. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

- 35. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**
- 36. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**
- 37. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(10))**
- 38. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

- 35. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
 - a. If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
 - b. If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
 - c. If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
 - d. If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

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Renewals

38. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(9))**

Stratospheric Ozone Protection

39. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F.
40. If the permittee is subject to 40 CFR Part 82, and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

42. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).
43. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall comply with the requirements of 40 CFR Part 68, no later than the latest of the following dates as provided in 40 CFR 68.10(a):
- June 21, 1999,
 - Three years after the date on which a regulated substance is first listed under 40 CFR 68.130, or
 - The date on which a regulated substance is first present above a threshold quantity in a process.
44. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68.
45. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c). **(40 CFR Part 68)**

Emission Trading

47. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan's State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

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Permit to Install (PTI)

48. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule.² **(R 336.1201(1))**
49. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA.² **(R 336.1201(8), Section 5510 of Act 451)**
50. The terms and conditions of a PTI 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 the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI 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. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ.² **(R 336.1219)**
51. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months of the original PTI issuance date, or has been interrupted for 18 months, the applicable terms and conditions from that PTI, as incorporated into the ROP, shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P. O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI.² **(R 336.1201(4))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

SOURCE-WIDE CONDITIONS**POLLUTION CONTROL EQUIPMENT**

Entire facility: Both Smiths Creek Landfill (N6207) and Blue Water Renewables, LLC (P0262 that is subsumed into N6207)

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	225 ² ^a tpy	12-month rolling time period as determined at the end of each calendar month.	FG-FACILITY-BWR2	SC VI.1 and Appendix 7-2	R 336.1205(3) 40 CFR 52.21(d)

^a The 225 tons of carbon monoxide (CO) emissions limit includes the emissions from Section 1 (landfill).

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

- The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period CO emission calculation records for source wide, as required by Special Condition I.1 and Appendix 7-2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² **R 336.1205(3), 40 CFR 52.21(d)**
- The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period landfill gas usage records for FG-FACILITY-BWR2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² **(R 336.1205(3), 40 CFR 52.21(c) and (d))**

VII. REPORTING

- Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

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2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-2

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the New Source Performance Standards as specified in 40 CFR Part 60, Subpart A and Subpart WWW.² **(40 CFR Part 60 Subpart A and WWW)**
2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart AAAA.² **(40 CFR Part 63 Subparts A and AAAA)**
3. Each Responsible Official shall certify annually the compliance status of the stationary source with all stationary Source-Wide conditions. This certification shall be included as part of the annual certification of compliance as required in the General Conditions in Part A and Rule 213(4)(c). **(R 336.1213(4)(c))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EU-TREATMENTSYS-BWR2	This emission unit treats landfill gas before it is used for electrical generation. The treatment system removes particulate to at least the 10 micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion during subsequent use. The treatment of the LFG ensures that a high percentage of NMOC will be destroyed in the internal combustion engines (spark ignition, lean burn, reciprocating internal combustion engine Caterpillar G3520C, 2,233 bhp at 100% load engines and associated generator producing 1.6 megawatt gross electrical output).	06/01/2011	NA
EU-ICENGINE1-BWR2	Spark ignition, lean burn, reciprocating internal combustion engine (Caterpillar G3520C, 2,233 bhp at 100% load) for combusting treated landfill gas to produce electricity (1.6 megawatt gross electrical output).	06/01/2011	FG-ICENGINES-BWR2
EU-ICENGINE2-BWR2	Spark ignition, lean burn, reciprocating internal combustion engine (Caterpillar G3520C, 2,233 bhp at 100% load) for combusting treated landfill gas to produce electricity (1.6 megawatt gross electrical output).	06/01/2011	FG-ICENGINES-BWR2

**EU-TREATMENTSYS-BWR2
EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-TREATMENTSYS-BWR2: This emission unit treats landfill gas before it is used for electrical generation. The treatment system removes particulate to at least the 10 micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion during subsequent use. The treatment of the LFG ensures that a high percentage of NMOC will be destroyed in the internal combustion engines (spark ignition, lean burn, reciprocating internal combustion engine Caterpillar G3520C, 2,233 bhp at 100% load engines and associated generator producing 1.6 megawatt gross electrical output).

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatments system shall be subject to 40 CFR 60.752(b)(2)(iii)(A) or (B).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- The permittee shall operate the treatment system at all times when the collected gas is routed to the treatment system.² (40 CFR 60.753(f))
- The permittee shall operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system shall be subject to 40 CFR 60.752(b)(2)(iii)(A) or (B).² (40 CFR 60.752(b)(2)(iii)(C), 40 CFR 63.1955(a))
- The permittee shall operate the treatment system to comply with the provisions of 40 CFR 60.753(e) and (f) and 60.756(d).² (40 CFR 60.752(b)(2)(iv), 40 CFR 63.1955(a))

IV. DESIGN/EQUIPMENT PARAMETER(S)

- The treatment system shall be designed and installed as approved by AQD.² (40 CFR 60.752(b)(2)(iii)(C), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a))

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall keep up-to-date, readily accessible records of all control system exceedances of the operational standards in 40 CFR 60.753.² (40 CFR 60.758(e), 40 CFR 63.1955(a))
2. The permittee shall keep records of all preventive maintenance performed in accordance with the preventive maintenance plan (PMP) prepared pursuant to Special Condition IX.3.² (R 336.1201(3), 40 CFR 60.756(d))
3. The permittee shall provide information to the AQD as provided in 40 CFR 60.752(b)(2)(i)(B) describing the operation of the control device, the operating parameters which would indicate proper performance, and appropriate monitoring procedures. The AQD shall review the information and either approve it or request that additional information be submitted. The AQD may specify additional appropriate monitoring procedures.² (40 CFR 60.756(d))

See Appendices 3-2, 4-2, and 7-2

VII. REPORTING

1. The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD District Office, delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² (40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))
2. The permittee shall submit to the appropriate AQD District Office semi-annual reports for the landfill gas treatment system. The report shall be received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² (40 CFR 60.757(f), 40 CFR 63.1980(a), 40 CFR 63.1955(a))
 - a. Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(d).² (R 336.1213(3), 40 CFR 60.757(f)(1), 40 CFR 63.1980(a), 40 CFR 63.1955(a))
 - b. Description and duration of all periods when the gas stream is diverted from the treatment system through a bypass line or the indication of bypass flow.² (R 336.1201(3))
 - c. Description and duration of all periods when the treatment system was not operating for a period exceeding one hour and length of time the control device was not operating.² (40 CFR 60.757(f)(3), 40 CFR 63.1980(a), 40 CFR 63.1955(a))
 - d. Description and duration of all periods when the treatment system was not operated in accordance with the operating parameters and monitoring procedures that were part of the plan in Special Condition VII.1.² (R 336.1201(3))
3. The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD district office and it shall be delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² (40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))
4. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
5. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
6. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))

See Appendix 8-2

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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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The provisions of 40 CFR 60.755 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 one hour for the treatment system.² **(40 CFR 60.755(e), 40 CFR 63.1955(a))**
2. The permittee shall have developed and implemented a written SSM plan according to the provision in 40 CFR 63.6(e)(3) for EU-TREATMENTSYS-BWR2. A copy of the SSM plan shall be maintained on site.² **(40 CFR 63.1960, 40 CFR 63.1965(c))**
3. The permittee shall have developed and implemented a written preventive maintenance plan (PMP) for EU-TREATMENTSYS-BWR2. At a minimum, the plan shall include a schedule of maintenance activities consistent with the equipment manufacturers' recommendations, and the operating variables that will be monitored to detect a malfunction or failure. A copy of the PMP shall be maintained on site.² **(R 336.1201(3), R 336.1911, 40 CFR 60.756(d))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FG-ICENGINES-BWR2	Two (2) reciprocating internal combustion engines (RICE) that will only combust treated landfill gas for fuel. Each engine has an associated generator set for producing electricity (PTI No. 163-09D)	EU-ICENGINE1-BWR2 EU-ICENGINE2-BWR2

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**FG-ICENGINES-BWR2
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

FG-ICENGINES-BWR2 (may also be referred to as FG-ICENGINES): Two (2) reciprocating internal combustion engines (RICE) that will only combust treated landfill gas for fuel. Each engine has an associated generator set for producing electricity (PTI No. 163-09D).

Emission Units: EU-ICENGINE1-BWR2 (may also be referred to as EU-ICENGINE1) and EU-ICENGINE2-BWR2 (may also be referred to as EU-ICENGINE2)

POLLUTION CONTROL EQUIPMENT

Air-to-fuel ratio controller on each engine.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	16.3 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.1	R 336.1205 40 CFR 52.21(d)
2. CO	5.0 ² g/bhp-hr or 610 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
3. NO _x	3.0 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.1	40 CFR 52.21(c) and (d)
4. NO _x	2.0 ² g/bhp-hr or 150 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
5. Hydrogen Chloride (HCl)	0.51 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.1	R 336.1225

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Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
6. VOC	1.0 ² g/bhp-hr or 80 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
7. Formaldehyde	2.12 ² pph ¹ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.3	R 336.1225(2)
8. SO ₂	6.21 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.1	40 CFR 52.21(c) and (d)
9. SO ₂	54.4 ² tpy ^A	12-month rolling time period, as determined at the end of each calendar month	FG-ICENGINES- BWR2	SC V.4 SC VI.2 and Appendix A	R 336.1205(3)

^AThis limit is based on the calculation in Appendix 7-2

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall *only* burn landfill gas in FG-ICENGINES-BWR2 that has been treated in a system which complies with 40 CFR 60.752(b)(2)(iii)(C).² **(R 336.1225, 40 CFR 60.752(b)(2)(iii)(c))**
2. No later than 60 days after issuance of this permit, the permittee shall submit to the AQD District Supervisor, for review and approval, an updated malfunction abatement/preventative maintenance plan for FG-ICENGINES-BWR2. After approval of the malfunction abatement/preventative maintenance plan by the AQD District Supervisor, the permittee shall not operate FG-ICENGINES-BWR2 unless the malfunction abatement/preventative maintenance plan, 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:²
 - 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.

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If the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the malfunction abatement/preventative maintenance plan to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d))**

3. The permittee shall operate and maintain each engine in FG-ICENGINES-BWR2 such that it meets the emission limits established, over the entire life of the engine.² **(40 CFR 60.4234, 40 CFR 60.4243(b))**
4. If the permittee purchased a non-certified engine or a certified engine operating in a non-certified manner, the permittee shall keep a maintenance plan for each engine in FG-ICENGINES-BWR2 and shall, to the extent practicable, maintain and operate each engine in a manner consistent with good air pollution control practice for minimizing emissions.² **(40 CFR 60.4243(b))**
5. Each engine in FG-ICENGINES-BWR2 shall operate in a manner which reasonably minimizes HAP emissions.² **(40 CFR 63.6625(c))**
6. Each engine in FG-ICENGINES-BWR2 shall operate in a manner which minimizes time spent at idle during startup and minimize the startup time to a period needed for appropriate and safe loading of each engine, not to exceed 30 minutes.² **(40 CFR 63.6625(h))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate any engine in FG-ICENGINES-BWR2 unless that engine's air/fuel ratio controller is installed, maintained and operated in a satisfactory manner.² **(R 336.1702, R 336.1910)**
2. The permittee shall equip and maintain FG-ICENGINES-BWR2 with non-resettable hours meters to track the operating hours.² **(40 CFR 60.4243)**
3. The permittee shall equip FG-ICENGINES-BWR2 with a device to monitor and record the total landfill gas fuel usage for FG-ICENGINES-BWR2 on a continuous basis.² **(R 336.1205, R 336.1225, 40 CFR 63.6625(c))**
4. The design capacity of each engine in FG-ICENGINES-BWR2 shall not exceed 2,233 bhp, as specified by the equipment manufacturer.² **(R 336.1205, R 336.1225, R 336.1702)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within every five years from the date of completion of the most recent stack test, the permittee shall verify NO_x, HCl, CO, SO₂ emission rates from each engine in FG-ICENGINES-BWR2, by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in the table below:²

Pollutant	Test Method Reference
NO _x	40 CFR Part 60, Appendix A
SO ₂	40 CFR Part 60, Appendix A
CO	40 CFR Part 60, Appendix A
Hydrogen Chloride	40 CFR Part 60, Appendix A

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 30 days prior to testing, 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 testing, including any modifications to the method in the test protocol that are proposed after initial submittal. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and

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District Office within 60 days following the last date of the test. **(R 336.1205, R 336.1225, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) and (d))**

2. Except as provided in 40 CFR 60.4243(b), the permittee shall conduct an initial performance test for each engine in FG-ICENGINES-BWR2 within one year after startup of the engine and every 8,760 hours of operation (as determined through the use of a non-resettable hour meter) or three years, whichever occurs first, to demonstrate compliance with the emission limits in 40 CFR 60.4233(e), and as established in this permit, unless the engines have been certified by the manufacturer as required by 40 CFR Part 60 Subpart JJJJ and the permittee maintains the engine as required by 40 CFR 60.4243(a)(1). If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4244. No less than 30 days prior to any testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The permittee shall not test without prior approval of the test plan by AQD. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.² **(40 CFR 60.4243, 40 CFR 60.4244, 40 CFR Part 60 Subpart JJJJ)**
3. Within every five years from the date of completion of the most recent stack test, the permittee shall verify formaldehyde emission rates from each engine in FG-ICENGINES-BWR2 at maximum routine operating conditions, by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.² **(R 336.1225(2), R 336.2001, R 336.2003, R 336.2004)**
4. The permittee shall verify the hydrogen sulfide (H₂S) or total reduced sulfur (TRS) content of the landfill gas burned in FG-ICENGINES-BWR2 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. If at any time, the H₂S (TRS equivalent) concentration of the landfill gas sample exceeds 1,300 ppmv, the permittee shall sample and record the H₂S (TRS equivalent) concentration of the landfill gas daily and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken. Once the H₂S (TRS equivalent) concentration of the landfill gas determined from the daily samples are maintained below 1,300 ppmv, for one week after an exceedance, the permittee may resume weekly monitoring and recordkeeping. No less than 30 days prior to the initial test for each type of gas sampling, 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 shall keep all records on file at the facility and make them available to the Department upon request.² **(R 336.1205(3), R 336.1225, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21 (c) and (d))**

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall continuously monitor, in a satisfactory manner, the total landfill gas fuel usage and the hours of operation for FG-ICENGINES-BWR2.² **(40 CFR 52.21(c) and (d), 40 CFR Part 60 Subpart JJJJ)**
2. The permittee shall calculate and record the SO₂ emission rates from FG-ICENGINES-BWR2 using the equation in Appendix 8-2, C. The calculations shall utilize, at a minimum, weekly gas sampling data collected (Special Condition V.4), the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test. All records shall be kept on file at the facility and make them available to the Department upon request.² **(R 336.1205(3)), 40 CFR 52.21 (c) and (d))**
3. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.² **(R 336.1205, R 336.1225, R 336.1702, 40 CFR 52.21(c) and (d))**

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4. The permittee shall maintain the following record for each engine in FG-ICENGINES-BWR2. The following information shall be recorded and kept on file at the facility:²
- a. Engine manufacturer;
 - b. Date engine was manufactured;
 - c. Engine model number and model year;
 - d. Maximum engine power;
 - e. Engine serial number;
 - f. Engine specification sheet;
 - g. Date of initial startup of the engine; and
 - h. Date engine was removed from service at this stationary source.

All of the above information shall be stored in a format acceptable to the AQD District Supervisor. **(R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702, R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d))**

5. The permittee shall maintain records of all information necessary for all notifications and reports for each engine in FG-ICENGINES-BWR2, as specified in these special conditions as well as that information necessary to demonstrate compliance with the emission limits of this permit. This information shall include, but shall not be limited to the following:²
- a. Compliance tests and any testing required under the special conditions of this permit;
 - b. Monitoring data for the hours of operation, volumetric flow rate and landfill gas usage of each engine;
 - c. Calculated amount of landfill gas combusted in each engine on a monthly and 12-month rolling basis;
 - d. Hours of operation on a monthly and 12-month rolling basis;
 - e. Monthly average Btu content of the landfill gas burned;
 - f. Manufacturer's data, specifications, and operating and maintenance procedures;
 - g. Maintenance activities conducted according to the PM/MAF;
 - h. All calculations necessary to show compliance with the limits contained in this permit.

All of the above information shall be stored in a format acceptable to the AQD District Supervisor. **(R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d), 40 CFR Part 60 Subpart JJJJ, 40 CFR 63.6625(c))**

See Appendix 7-2

VII. REPORTING

- 1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
- 2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
- 3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
- 4. The permittee shall submit an initial notification as required by 40 CFR 60.7(a)(1) for each engine in FG-ICENGINES-BWR2 if the engine(s) installed is/are not certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231. The notification shall include the information below, as specified in 40 CFR 60.4245 (c)(1) through (5).²
 - a. Name and address of the owner or operator. **(40 CFR 60.4245(c)(1))**
 - b. The address of the affected source. **(40 CFR 60.4245(c)(2))**
 - c. Engine information including engine manufacturer, model, model year, date of manufacture, maximum engine power, engine displacement, engine family, serial number. **(40 CFR 60.4245(c)(3))**

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- d. Emission control equipment. **(40 CFR 60.4245(c)(4))**
- e. Fuel used. **(40 CFR 60.4245(c)(5))**

The permittee shall submit the initial notification to the AQD District Supervisor in an acceptable format within 30 days of commencing construction of any engine in FGICENGINES. **(40 CFR Part 60, Subpart JJJJ)**

- 5. The permittee shall submit an annual report in accordance with Table 7 of 40 CFR Part 63, Subpart ZZZZ to the appropriate AQD district office by no later than January 31. The following information shall be included in this annual report:² **(40 CFR 63.6650(g), 40 CFR 63.6650(b)(5))**
 - a. The fuel flow rate and the heating values that were used in the permittee's calculations. Also, the permittee must demonstrate that the percentage of heat input provided by landfill gas or digester gas is equivalent to 10 percent or more of the total fuel consumption on an annual basis. **(40 CFR 63.6650(g)(1))**
 - b. The operating limits provided in the permittee's federally enforceable permit, and any deviations from these limits. **(40 CFR 63.6650(g)(2))**
 - c. Any problems or errors suspected from the fuel flow rate meters. **(40 CFR 63.6650(g)(3))**

See Appendix 8-2

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVICENGINE1	16 ²	38 ²	R 336.1225 40 CFR 52.21 (c) and (d)
2. SVICENGINE2	16 ²	38 ²	R 336.1225 40 CFR 52.21 (c) and (d)

IX. OTHER REQUIREMENT(S)

- 1. The permittee shall comply with all applicable provisions of the New Source Performance Standards as specified in 40 CFR Part 60, Subpart A and Subpart JJJJ, as they apply to FGICENGINES.² **(40 CFR Part 60 Subpart A and JJJJ)**
- 2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart ZZZZ, as they apply to FGICENGINES.² **(40 CFR Part 63, Subparts A and ZZZZ)**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1-2. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO _{2e}	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
EU	Emission Unit	gr	Grains
FG	Flexible Group	HAP	Hazardous Air Pollutant
GACS	Gallons of Applied Coating Solids	Hg	Mercury
GC	General Condition	hr	Hour
GHGs	Greenhouse Gases	HP	Horsepower
HVLP	High Volume Low Pressure*	H ₂ S	Hydrogen Sulfide
ID	Identification	kW	Kilowatt
IRSL	Initial Risk Screening Level	lb	Pound
ITSL	Initial Threshold Screening Level	m	Meter
LAER	Lowest Achievable Emission Rate	mg	Milligram
MACT	Maximum Achievable Control Technology	mm	Millimeter
MAERS	Michigan Air Emissions Reporting System	MM	Million
MAP	Malfunction Abatement Plan	MW	Megawatts
MDEQ	Michigan Department of Environmental Quality	NMOC	Non-methane Organic Compounds
MSDS	Material Safety Data Sheet	NO _x	Oxides of Nitrogen
NA	Not Applicable	ng	Nanogram
NAAQS	National Ambient Air Quality Standards	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM10	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSR	New Source Review	pph	Pounds per hour
PS	Performance Specification	ppm	Parts per million
PSD	Prevention of Significant Deterioration	ppmv	Parts per million by volume
PTE	Permanent Total Enclosure	ppmw	Parts per million by weight
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
		µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

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Appendix 2-2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3-2. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4-2. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5-2. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6-2. Permits to Install

The following table lists any PTIs issued or ROP revision applications received since the effective date of the previously issued ROP No. MI-ROP-P0262-2012. Those ROP revision applications that are being issued concurrently with this ROP renewal are identified by an asterisk (*). Those revision applications not listed with an asterisk were processed prior to this renewal.

Source-Wide PTI No MI-PTI-P0262-2012a dated August 18, 2015 is being reissued as Source-Wide PTI No. MI-PTI-N6207-18.

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)
163-09D, dated June 1, 2017	201700078*, dated June 21, 2017	PTI revision to increase the amount of allowable hydrogen sulfide (H ₂ S) content of the landfill gas to 1,300 ppmv prior to being burned in the two existing landfill gas fired engines, located at 6797 Smiths Creek Road, Smiths Creek, Michigan.	EUTREATMENTSYS EUCENGINE1 EUCENGINE2

Appendix 7-2. Emission Calculations

Specific emission calculations to be used with monitoring, testing or recordkeeping data are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible group Special Conditions. Therefore, this appendix is not applicable.

Appendix 8-2. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

C. Other Reporting - Calculations

**Permit No. 163-09D APPENDIX A
 Procedures for Calculating Emissions**

The permittee shall demonstrate compliance with the emission limits in this permit by vendor data, stack testing, and/or gas testing.

Vendor Data or Stack Testing:

The permittee shall use emission factors from vendor data or from source specific testing (if stack test data is available, use most recent stack test data), as available for each emission unit included in FGFACILITY. The permittee shall use emission factors contained in the most recent AP-42 (Compilation of Air Pollutant Emission Factors) or the most recent FIRE (Factor Information Retrieval) database if vendor or stack testing data is not available. If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions. The permittee shall document the source of each emission factor used in the calculations.

Calculation for Monthly SO₂ Emissions:

The following calculation for SO₂ emissions shall utilize the monthly average of the weekly (or daily, if required) H₂S concentration measurements from test data collected, the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test.

SO₂ Emissions (tons per month)

$$= \frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} \times \frac{1.1733 \text{ mols Sulfur}}{\text{ft}^3} \times \frac{34.08 \text{ grams}}{\text{mol Sulfur}} \times \frac{\text{pound}}{453.59 \text{ grams}}$$

$$\times \frac{1 \text{ ton}}{2,000 \text{ pounds}} \times \frac{1.88 \text{ SO}_2}{\text{H}_2\text{S}} \text{Molecular Weight Ratio} \times \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} \times \text{Monthly Landfill Gas Usage (ft}^3\text{/month)}$$

APPENDIX A

Updated Emissions Calculations

Smiths Creek Landfill
Landfill Gas and NMOC Emissions Combined from Two Model Runs

Year	LFG Flow SM 1 cfm	LFG Flow SM 2 cfm	LFG Flow Combined cfm	NMOC Ems SM 1 Mg/year	NMOC Ems SM 2 Mg/year	NMOC Ems Combined Mg/year
1967	0		0	0		0.00
1968	5.822E+01		58	2.466E+00		2.47
1969	1.142E+02		114	4.838E+00		4.84
1970	1.679E+02		168	7.114E+00		7.11
1971	2.196E+02		220	9.301E+00		9.30
1972	2.692E+02		269	1.140E+01		11.40
1973	3.170E+02		317	1.343E+01		13.43
1974	3.627E+02		363	1.537E+01		15.37
1975	4.067E+02		407	1.723E+01		17.23
1976	4.491E+02		449	1.902E+01		19.02
1977	4.895E+02		490	2.074E+01		20.74
1978	5.289E+02		529	2.240E+01		22.40
1979	5.667E+02		567	2.400E+01		24.00
1980	6.026E+02		603	2.552E+01		25.52
1981	6.370E+02		637	2.698E+01		26.98
1982	6.706E+02		671	2.841E+01		28.41
1983	7.024E+02		702	2.975E+01		29.75
1984	7.329E+02		733	3.104E+01		31.04
1985	7.627E+02		763	3.231E+01		32.31
1986	7.909E+02		791	3.350E+01		33.50
1987	8.180E+02		818	3.465E+01		34.65
1988	8.444E+02		844	3.577E+01		35.77
1989	8.694E+02		869	3.683E+01		36.83
1990	8.934E+02		893	3.784E+01		37.84
1991	8.855E+02		886	3.751E+01		37.51
1992	8.885E+02		888	3.763E+01		37.63
1993	8.910E+02		891	3.774E+01		37.74
1994	8.913E+02		891	3.775E+01		37.75
1995	8.966E+02		897	3.798E+01		37.98
1996	9.116E+02		912	3.861E+01		38.61
1997	9.229E+02		923	3.909E+01		39.09
1998	9.209E+02		921	3.901E+01		39.01
1999	9.453E+02		945	4.004E+01		40.04
2000	9.855E+02		985	4.174E+01		41.74
2001	1.021E+03		1,021	4.326E+01		43.26
2002	1.053E+03		1,053	4.461E+01		44.61
2003	1.074E+03		1,074	4.548E+01		45.48
2004	1.096E+03		1,096	4.641E+01		46.41
2005	1.120E+03		1,120	4.745E+01		47.45
2006	1.180E+03		1,180	4.999E+01		49.99
2007	1.200E+03		1,200	5.083E+01		50.83
2008	1.260E+03	0	1,260	5.335E+01	0	53.35
2009	1.210E+03	1.687E+02	1,379	5.126E+01	7.148E+00	58.41
2010	1.163E+03	3.080E+02	1,471	4.925E+01	1.305E+01	62.29
2011	1.117E+03	4.419E+02	1,559	4.732E+01	1.872E+01	66.04
2012	1.073E+03	5.966E+02	1,670	4.546E+01	2.527E+01	70.73
2013	1.031E+03	7.163E+02	1,748	4.368E+01	3.034E+01	74.02
2014	9.908E+02	8.314E+02	1,822	4.197E+01	3.522E+01	77.18
2015	9.519E+02	9.713E+02	1,923	4.032E+01	4.114E+01	81.46
2016	9.146E+02	1.179E+03	2,093	3.874E+01	4.993E+01	88.67
2017	8.787E+02	1.356E+03	2,235	3.722E+01	5.744E+01	94.67
2018	8.443E+02	1.603E+03	2,447	3.576E+01	6.789E+01	103.65
2019	8.112E+02	1.786E+03	2,597	3.436E+01	7.565E+01	110.01

Year	LFG Flow SM 1 cfm	LFG Flow SM 2 cfm	LFG Flow Combined cfm	NMOC Ems SM 1 Mg/year	NMOC Ems SM 2 Mg/year	NMOC Ems Combined Mg/year
2020	7.794E+02	1.934E+03	2,714	3.301E+01	8.193E+01	114.95
2021	7.488E+02	2.001E+03	2,750	3.172E+01	8.475E+01	116.47
2022	7.195E+02	2.097E+03	2,817	3.047E+01	8.883E+01	119.31
2023	6.912E+02	2.266E+03	2,957	2.928E+01	9.598E+01	125.26
2024	6.641E+02	2.422E+03	3,086	2.813E+01	1.026E+02	130.72
2025	6.381E+02	2.566E+03	3,204	2.703E+01	1.087E+02	135.71
2026	6.131E+02	2.698E+03	3,312	2.597E+01	1.143E+02	140.27
2027	5.890E+02	2.821E+03	3,410	2.495E+01	1.195E+02	144.45
2028	5.659E+02	2.934E+03	3,500	2.397E+01	1.243E+02	148.26
2029	5.438E+02	3.039E+03	3,582	2.303E+01	1.287E+02	151.75
2030	5.224E+02	3.135E+03	3,658	2.213E+01	1.328E+02	154.93
2031	5.019E+02	3.224E+03	3,726	2.126E+01	1.366E+02	157.83
2032	4.823E+02	3.306E+03	3,789	2.043E+01	1.400E+02	160.48
2033	4.634E+02	3.382E+03	3,845	1.963E+01	1.433E+02	162.89
2034	4.452E+02	3.452E+03	3,897	1.886E+01	1.462E+02	165.08
2035	4.277E+02	3.517E+03	3,944	1.812E+01	1.490E+02	167.08
2036	4.110E+02	3.576E+03	3,987	1.741E+01	1.515E+02	168.90
2037	3.948E+02	3.632E+03	4,026	1.673E+01	1.538E+02	170.55
2038	3.794E+02	3.682E+03	4,062	1.607E+01	1.560E+02	172.05
2039	3.645E+02	3.729E+03	4,094	1.544E+01	1.580E+02	173.41
2040	3.502E+02	3.773E+03	4,123	1.483E+01	1.598E+02	174.64
2041	3.365E+02	3.813E+03	4,149	1.425E+01	1.615E+02	175.75
2042	3.233E+02	3.850E+03	4,173	1.369E+01	1.631E+02	176.75
2043	3.106E+02	3.884E+03	4,194	1.316E+01	1.645E+02	177.66
2044	2.984E+02	3.915E+03	4,214	1.264E+01	1.658E+02	178.48
2045	2.867E+02	3.944E+03	4,231	1.214E+01	1.671E+02	179.21
2046	2.755E+02	3.971E+03	4,246	1.167E+01	1.682E+02	179.87
2047	2.647E+02	3.996E+03	4,260	1.121E+01	1.693E+02	180.46
2048	2.543E+02	4.019E+03	4,273	1.077E+01	1.702E+02	180.99
2049	2.443E+02	4.040E+03	4,284	1.035E+01	1.711E+02	181.46
2050	2.347E+02	4.059E+03	4,294	9.943E+00	1.719E+02	181.88
2051	2.255E+02	4.077E+03	4,303	9.553E+00	1.727E+02	182.25
2052	2.167E+02	4.094E+03	4,310	9.179E+00	1.734E+02	182.58
2053	2.082E+02	4.109E+03	4,317	8.819E+00	1.741E+02	182.87
2054	2.000E+02	4.123E+03	4,323	8.473E+00	1.746E+02	183.12
2055	1.922E+02	4.136E+03	4,328	8.141E+00	1.752E+02	183.34
2056	1.847E+02	4.148E+03	4,333	7.822E+00	1.757E+02	183.53
2057	1.774E+02	4.159E+03	4,337	7.515E+00	1.762E+02	183.70
2058	1.705E+02	4.170E+03	4,340	7.220E+00	1.766E+02	183.84
2059	1.638E+02	4.179E+03	4,343	6.937E+00	1.770E+02	183.96
2060	1.574E+02	4.188E+03	4,345	6.665E+00	1.774E+02	184.06
2061	1.512E+02	4.196E+03	4,347	6.404E+00	1.777E+02	184.14
2062	1.453E+02	4.203E+03	4,349	6.153E+00	1.780E+02	184.20
2063	1.396E+02	4.210E+03	4,350	5.912E+00	1.783E+02	184.25
2064	1.341E+02	3.887E+03	4,021	5.680E+00	1.646E+02	170.31
2065	1.288E+02	3.588E+03	3,717	5.457E+00	1.520E+02	157.43

Maximum Fugitive NMOC Emissions:

184.25 $\frac{\text{Mg}}{\text{year}}$ X

25% X

1.1 $\frac{\text{tons}}{\text{Mg}}$ =

50.67 $\frac{\text{tons NMOC}}{\text{year}}$

Input Review: Smith's Creek Non-Bioreactor Areas

LANDFILL CHARACTERISTICS

Landfill Open Year	1967
Landfill Closure Year (with 80-year limit)	2007

MODEL PARAMETERS

Methane Generation Rate, k	0.040	<i>year-1</i>
Potential Methane Generation Capacity, L0	100	<i>m3/Mg</i>
NMOC Concentration	794	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1967	110,273	121,300	0	0
1968	110,364	121,400	110,273	121,300
1969	110,273	121,300	220,636	242,700
1970	110,273	121,300	330,909	364,000
1971	110,364	121,400	441,182	485,300
1972	110,364	121,400	551,545	606,700
1973	110,273	121,300	661,909	728,100
1974	110,273	121,300	772,182	849,400
1975	110,364	121,400	882,455	970,700
1976	110,000	121,000	992,818	1,092,100
1977	110,909	122,000	1,102,818	1,213,100
1978	110,909	122,000	1,213,727	1,335,100
1979	110,000	121,000	1,324,636	1,457,100
1980	110,000	121,000	1,434,636	1,578,100
1981	110,909	122,000	1,544,636	1,699,100
1982	110,000	121,000	1,655,545	1,821,100
1983	110,000	121,000	1,765,545	1,942,100
1984	110,909	122,000	1,875,545	2,063,100
1985	110,000	121,000	1,986,455	2,185,100
1986	110,000	121,000	2,096,455	2,306,100
1987	110,909	122,000	2,206,455	2,427,100
1988	110,000	121,000	2,317,364	2,549,100
1989	110,000	121,000	2,427,364	2,670,100
1990	51,437	56,581	2,537,364	2,791,100
1991	71,377	78,515	2,588,801	2,847,681
1992	70,806	77,886	2,660,178	2,926,196
1993	66,713	73,384	2,730,983	3,004,082
1994	76,118	83,730	2,797,696	3,077,466
1995	95,040	104,545	2,873,814	3,161,195
1996	89,166	98,082	2,968,854	3,265,740
1997	64,707	71,178	3,058,020	3,363,822
1998	114,545	126,000	3,122,727	3,435,000
1999	146,364	161,000	3,237,273	3,561,000
2000	140,909	155,000	3,383,636	3,722,000
2001	136,364	150,000	3,524,545	3,877,000
2002	117,273	129,000	3,660,909	4,027,000
2003	121,179	133,297	3,778,182	4,156,000
2004	127,759	140,535	3,899,361	4,289,297
2005	196,775	216,452	4,027,120	4,429,832
2006	125,401	137,941	4,223,895	4,646,284
2007	201,760	221,936	4,349,296	4,784,225
2008	0	0	4,551,056	5,006,161

Results

Year	Total landfill gas		
	(Mg/year)	(m3/year)	(av ft ³ /min)
1967	0	0	0
1968	1.082E+03	8.665E+05	5.822E+01
1969	2.123E+03	1.700E+06	1.142E+02
1970	3.122E+03	2.500E+06	1.679E+02
1971	4.081E+03	3.268E+06	2.196E+02
1972	5.004E+03	4.007E+06	2.692E+02
1973	5.891E+03	4.717E+06	3.170E+02
1974	6.742E+03	5.399E+06	3.627E+02
1975	7.560E+03	6.054E+06	4.067E+02
1976	8.346E+03	6.683E+06	4.491E+02
1977	9.099E+03	7.286E+06	4.895E+02
1978	9.830E+03	7.872E+06	5.289E+02
1979	1.053E+04	8.434E+06	5.667E+02
1980	1.120E+04	8.968E+06	6.026E+02
1981	1.184E+04	9.481E+06	6.370E+02
1982	1.246E+04	9.981E+06	6.706E+02
1983	1.305E+04	1.045E+07	7.024E+02
1984	1.362E+04	1.091E+07	7.329E+02
1985	1.418E+04	1.135E+07	7.627E+02
1986	1.470E+04	1.177E+07	7.909E+02
1987	1.520E+04	1.217E+07	8.180E+02
1988	1.570E+04	1.257E+07	8.444E+02
1989	1.616E+04	1.294E+07	8.694E+02
1990	1.661E+04	1.330E+07	8.934E+02
1991	1.646E+04	1.318E+07	8.855E+02
1992	1.651E+04	1.322E+07	8.885E+02
1993	1.656E+04	1.326E+07	8.910E+02
1994	1.657E+04	1.327E+07	8.913E+02
1995	1.666E+04	1.334E+07	8.966E+02
1996	1.694E+04	1.357E+07	9.116E+02
1997	1.715E+04	1.374E+07	9.229E+02
1998	1.712E+04	1.371E+07	9.209E+02
1999	1.757E+04	1.407E+07	9.453E+02
2000	1.832E+04	1.467E+07	9.855E+02
2001	1.898E+04	1.520E+07	1.021E+03
2002	1.957E+04	1.567E+07	1.053E+03
2003	1.996E+04	1.598E+07	1.074E+03
2004	2.036E+04	1.631E+07	1.096E+03
2005	2.082E+04	1.667E+07	1.120E+03
2006	2.193E+04	1.756E+07	1.180E+03
2007	2.230E+04	1.786E+07	1.200E+03
2008	2.341E+04	1.875E+07	1.260E+03
2009	2.249E+04	1.801E+07	1.210E+03
2010	2.161E+04	1.730E+07	1.163E+03
2011	2.076E+04	1.663E+07	1.117E+03
2012	1.995E+04	1.597E+07	1.073E+03
2013	1.917E+04	1.535E+07	1.031E+03
2014	1.842E+04	1.475E+07	9.908E+02
2015	1.769E+04	1.417E+07	9.519E+02
2016	1.700E+04	1.361E+07	9.146E+02

Results (Continued)

Year	Total landfill gas		
	(Mg/year)	(m3/year)	(av ft ³ /min)
2017	1.633E+04	1.308E+07	8.787E+02
2018	1.569E+04	1.257E+07	8.443E+02
2019	1.508E+04	1.207E+07	8.112E+02
2020	1.449E+04	1.160E+07	7.794E+02
2021	1.392E+04	1.114E+07	7.488E+02
2022	1.337E+04	1.071E+07	7.195E+02
2023	1.285E+04	1.029E+07	6.912E+02
2024	1.234E+04	9.884E+06	6.641E+02
2025	1.186E+04	9.497E+06	6.381E+02
2026	1.139E+04	9.125E+06	6.131E+02
2027	1.095E+04	8.767E+06	5.890E+02
2028	1.052E+04	8.423E+06	5.659E+02
2029	1.011E+04	8.093E+06	5.438E+02
2030	9.710E+03	7.775E+06	5.224E+02
2031	9.329E+03	7.471E+06	5.019E+02
2032	8.964E+03	7.178E+06	4.823E+02
2033	8.612E+03	6.896E+06	4.634E+02
2034	8.274E+03	6.626E+06	4.452E+02
2035	7.950E+03	6.366E+06	4.277E+02
2036	7.638E+03	6.116E+06	4.110E+02
2037	7.339E+03	5.877E+06	3.948E+02
2038	7.051E+03	5.646E+06	3.794E+02
2039	6.775E+03	5.425E+06	3.645E+02
2040	6.509E+03	5.212E+06	3.502E+02
2041	6.254E+03	5.008E+06	3.365E+02
2042	6.008E+03	4.811E+06	3.233E+02
2043	5.773E+03	4.623E+06	3.106E+02
2044	5.547E+03	4.441E+06	2.984E+02
2045	5.329E+03	4.267E+06	2.867E+02
2046	5.120E+03	4.100E+06	2.755E+02
2047	4.919E+03	3.939E+06	2.647E+02
2048	4.726E+03	3.785E+06	2.543E+02
2049	4.541E+03	3.636E+06	2.443E+02
2050	4.363E+03	3.494E+06	2.347E+02
2051	4.192E+03	3.357E+06	2.255E+02
2052	4.028E+03	3.225E+06	2.167E+02
2053	3.870E+03	3.099E+06	2.082E+02
2054	3.718E+03	2.977E+06	2.000E+02
2055	3.572E+03	2.860E+06	1.922E+02
2056	3.432E+03	2.748E+06	1.847E+02
2057	3.298E+03	2.640E+06	1.774E+02
2058	3.168E+03	2.537E+06	1.705E+02
2059	3.044E+03	2.437E+06	1.638E+02
2060	2.925E+03	2.342E+06	1.574E+02
2061	2.810E+03	2.250E+06	1.512E+02
2062	2.700E+03	2.162E+06	1.453E+02
2063	2.594E+03	2.077E+06	1.396E+02
2064	2.492E+03	1.996E+06	1.341E+02
2065	2.394E+03	1.917E+06	1.288E+02

Results (Continued)

Year	NMOC		
	(Mg/year)	(m3/year)	(av ft ³ /min)
1967	0	0	0
1968	2.466E+00	6.880E+02	4.623E-02
1969	4.838E+00	1.350E+03	9.068E-02
1970	7.114E+00	1.985E+03	1.334E-01
1971	9.301E+00	2.595E+03	1.743E-01
1972	1.140E+01	3.182E+03	2.138E-01
1973	1.343E+01	3.745E+03	2.517E-01
1974	1.537E+01	4.287E+03	2.880E-01
1975	1.723E+01	4.807E+03	3.230E-01
1976	1.902E+01	5.307E+03	3.566E-01
1977	2.074E+01	5.785E+03	3.887E-01
1978	2.240E+01	6.250E+03	4.199E-01
1979	2.400E+01	6.697E+03	4.500E-01
1980	2.552E+01	7.121E+03	4.784E-01
1981	2.698E+01	7.528E+03	5.058E-01
1982	2.841E+01	7.925E+03	5.324E-01
1983	2.975E+01	8.300E+03	5.577E-01
1984	3.104E+01	8.661E+03	5.819E-01
1985	3.231E+01	9.013E+03	6.056E-01
1986	3.350E+01	9.346E+03	6.280E-01
1987	3.465E+01	9.666E+03	6.495E-01
1988	3.577E+01	9.979E+03	6.705E-01
1989	3.683E+01	1.027E+04	6.903E-01
1990	3.784E+01	1.056E+04	7.094E-01
1991	3.751E+01	1.046E+04	7.031E-01
1992	3.763E+01	1.050E+04	7.055E-01
1993	3.774E+01	1.053E+04	7.075E-01
1994	3.775E+01	1.053E+04	7.077E-01
1995	3.798E+01	1.059E+04	7.119E-01
1996	3.861E+01	1.077E+04	7.238E-01
1997	3.909E+01	1.091E+04	7.328E-01
1998	3.901E+01	1.088E+04	7.312E-01
1999	4.004E+01	1.117E+04	7.505E-01
2000	4.174E+01	1.165E+04	7.825E-01
2001	4.326E+01	1.207E+04	8.108E-01
2002	4.461E+01	1.245E+04	8.362E-01
2003	4.548E+01	1.269E+04	8.526E-01
2004	4.641E+01	1.295E+04	8.700E-01
2005	4.745E+01	1.324E+04	8.894E-01
2006	4.999E+01	1.395E+04	9.370E-01
2007	5.083E+01	1.418E+04	9.528E-01
2008	5.335E+01	1.488E+04	1.000E+00
2009	5.126E+01	1.430E+04	9.609E-01
2010	4.925E+01	1.374E+04	9.232E-01
2011	4.732E+01	1.320E+04	8.870E-01
2012	4.546E+01	1.268E+04	8.522E-01
2013	4.368E+01	1.219E+04	8.188E-01
2014	4.197E+01	1.171E+04	7.867E-01
2015	4.032E+01	1.125E+04	7.558E-01
2016	3.874E+01	1.081E+04	7.262E-01

Results (Continued)

Year	NMOC		
	(Mg/year)	(m3/year)	(av ft ³ /min)
2017	3.722E+01	1.038E+04	6.977E-01
2018	3.576E+01	9.977E+03	6.704E-01
2019	3.436E+01	9.586E+03	6.441E-01
2020	3.301E+01	9.210E+03	6.188E-01
2021	3.172E+01	8.849E+03	5.946E-01
2022	3.047E+01	8.502E+03	5.712E-01
2023	2.928E+01	8.169E+03	5.488E-01
2024	2.813E+01	7.848E+03	5.273E-01
2025	2.703E+01	7.541E+03	5.066E-01
2026	2.597E+01	7.245E+03	4.868E-01
2027	2.495E+01	6.961E+03	4.677E-01
2028	2.397E+01	6.688E+03	4.494E-01
2029	2.303E+01	6.426E+03	4.317E-01
2030	2.213E+01	6.174E+03	4.148E-01
2031	2.126E+01	5.932E+03	3.985E-01
2032	2.043E+01	5.699E+03	3.829E-01
2033	1.963E+01	5.476E+03	3.679E-01
2034	1.886E+01	5.261E+03	3.535E-01
2035	1.812E+01	5.055E+03	3.396E-01
2036	1.741E+01	4.856E+03	3.263E-01
2037	1.673E+01	4.666E+03	3.135E-01
2038	1.607E+01	4.483E+03	3.012E-01
2039	1.544E+01	4.307E+03	2.894E-01
2040	1.483E+01	4.138E+03	2.781E-01
2041	1.425E+01	3.976E+03	2.672E-01
2042	1.369E+01	3.820E+03	2.567E-01
2043	1.316E+01	3.670E+03	2.466E-01
2044	1.264E+01	3.526E+03	2.369E-01
2045	1.214E+01	3.388E+03	2.277E-01
2046	1.167E+01	3.255E+03	2.187E-01
2047	1.121E+01	3.128E+03	2.101E-01
2048	1.077E+01	3.005E+03	2.019E-01
2049	1.035E+01	2.887E+03	1.940E-01
2050	9.943E+00	2.774E+03	1.864E-01
2051	9.553E+00	2.665E+03	1.791E-01
2052	9.179E+00	2.561E+03	1.721E-01
2053	8.819E+00	2.460E+03	1.653E-01
2054	8.473E+00	2.364E+03	1.588E-01
2055	8.141E+00	2.271E+03	1.526E-01
2056	7.822E+00	2.182E+03	1.466E-01
2057	7.515E+00	2.097E+03	1.409E-01
2058	7.220E+00	2.014E+03	1.353E-01
2059	6.937E+00	1.935E+03	1.300E-01
2060	6.665E+00	1.859E+03	1.249E-01
2061	6.404E+00	1.787E+03	1.200E-01
2062	6.153E+00	1.717E+03	1.153E-01
2063	5.912E+00	1.649E+03	1.108E-01
2064	5.680E+00	1.585E+03	1.065E-01
2065	5.457E+00	1.522E+03	1.023E-01

Input Review: Smith's Creek Bioreactor Areas

LANDFILL CHARACTERISTICS

Landfill Open Year **2008**
 Landfill Closure Year (with 80-year limit) **2062**

MODEL PARAMETERS

Methane Generation Rate, k **0.080** *year-1*
 Potential Methane Generation Capacity, L0 **100** *m3/Mg*
 NMOC Concentration **794** *ppmv as hexane*
 Methane Content **50** *% by volume*

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2008	162,673	178,940	0	0
2009	146,728	161,401	162,673	178,940
2010	151,926	167,119	309,401	340,341
2011	181,915	200,107	461,327	507,460
2012	159,612	175,573	643,243	707,567
2013	164,048	180,453	802,855	883,140
2014	196,459	216,105	966,903	1,063,593
2015	271,975	299,172	1,163,362	1,279,698
2016	258,426	284,269	1,435,336	1,578,870
2017	338,155	371,971	1,693,763	1,863,139
2018	295,548	325,103	2,031,918	2,235,110
2019	275,292	302,821	2,327,466	2,560,213
2020	207,556	228,311	2,602,758	2,863,034
2021	241,156	265,272	2,810,314	3,091,345
2022	318,182	350,000	3,051,470	3,356,617
2023	318,182	350,000	3,369,652	3,706,617
2024	318,182	350,000	3,687,834	4,056,617
2025	318,182	350,000	4,006,016	4,406,617
2026	318,182	350,000	4,324,198	4,756,617
2027	318,182	350,000	4,642,379	5,106,617
2028	318,182	350,000	4,960,561	5,456,617
2029	318,182	350,000	5,278,743	5,806,617
2030	318,182	350,000	5,596,925	6,156,617
2031	318,182	350,000	5,915,107	6,506,617
2032	318,182	350,000	6,233,289	6,856,617
2033	318,182	350,000	6,551,470	7,206,617
2034	318,182	350,000	6,869,652	7,556,617
2035	318,182	350,000	7,187,834	7,906,617
2036	318,182	350,000	7,506,016	8,256,617
2037	318,182	350,000	7,824,198	8,606,617
2038	318,182	350,000	8,142,379	8,956,617
2039	318,182	350,000	8,460,561	9,306,617
2040	318,182	350,000	8,778,743	9,656,617
2041	318,182	350,000	9,096,925	10,006,617
2042	318,182	350,000	9,415,107	10,356,617
2043	318,182	350,000	9,733,289	10,706,617
2044	318,182	350,000	10,051,470	11,056,617
2045	318,182	350,000	10,369,652	11,406,617
2046	318,182	350,000	10,687,834	11,756,617
2047	318,182	350,000	11,006,016	12,106,617

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2048	318,182	350,000	11,324,198	12,456,617
2049	318,182	350,000	11,642,379	12,806,617
2050	318,182	350,000	11,960,561	13,156,617
2051	318,182	350,000	12,278,743	13,506,617
2052	318,182	350,000	12,596,925	13,856,617
2053	318,182	350,000	12,915,107	14,206,617
2054	318,182	350,000	13,233,289	14,556,617
2055	318,182	350,000	13,551,470	14,906,617
2056	318,182	350,000	13,869,652	15,256,617
2057	318,182	350,000	14,187,834	15,606,617
2058	318,182	350,000	14,506,016	15,956,617
2059	318,182	350,000	14,824,198	16,306,617
2060	318,182	350,000	15,142,379	16,656,617
2061	318,182	350,000	15,460,561	17,006,617
2062	318,182	350,000	15,778,743	17,356,617
2063	0	0	16,096,925	17,706,617

Results

Year	Total landfill gas		
	(Mg/year)	(m3/year)	(av ft ³ /min)
2008	0	0	0
2009	3.136E+03	2.511E+06	1.687E+02
2010	5.724E+03	4.584E+06	3.080E+02
2011	8.213E+03	6.577E+06	4.419E+02
2012	1.109E+04	8.879E+06	5.966E+02
2013	1.331E+04	1.066E+07	7.163E+02
2014	1.545E+04	1.237E+07	8.314E+02
2015	1.805E+04	1.446E+07	9.713E+02
2016	2.191E+04	1.754E+07	1.179E+03
2017	2.521E+04	2.018E+07	1.356E+03
2018	2.979E+04	2.385E+07	1.603E+03
2019	3.320E+04	2.658E+07	1.786E+03
2020	3.595E+04	2.879E+07	1.934E+03
2021	3.719E+04	2.978E+07	2.001E+03
2022	3.898E+04	3.121E+07	2.097E+03
2023	4.212E+04	3.372E+07	2.266E+03
2024	4.501E+04	3.604E+07	2.422E+03
2025	4.769E+04	3.819E+07	2.566E+03
2026	5.015E+04	4.016E+07	2.698E+03
2027	5.243E+04	4.199E+07	2.821E+03
2028	5.454E+04	4.367E+07	2.934E+03
2029	5.648E+04	4.522E+07	3.039E+03
2030	5.827E+04	4.666E+07	3.135E+03
2031	5.992E+04	4.798E+07	3.224E+03
2032	6.145E+04	4.921E+07	3.306E+03
2033	6.286E+04	5.034E+07	3.382E+03
2034	6.416E+04	5.138E+07	3.452E+03
2035	6.536E+04	5.234E+07	3.517E+03
2036	6.647E+04	5.323E+07	3.576E+03
2037	6.750E+04	5.405E+07	3.632E+03
2038	6.844E+04	5.481E+07	3.682E+03
2039	6.931E+04	5.550E+07	3.729E+03
2040	7.012E+04	5.615E+07	3.773E+03
2041	7.086E+04	5.674E+07	3.813E+03
2042	7.155E+04	5.729E+07	3.850E+03
2043	7.218E+04	5.780E+07	3.884E+03
2044	7.277E+04	5.827E+07	3.915E+03
2045	7.331E+04	5.870E+07	3.944E+03
2046	7.381E+04	5.910E+07	3.971E+03
2047	7.427E+04	5.947E+07	3.996E+03
2048	7.469E+04	5.981E+07	4.019E+03
2049	7.508E+04	6.012E+07	4.040E+03
2050	7.544E+04	6.041E+07	4.059E+03
2051	7.578E+04	6.068E+07	4.077E+03
2052	7.609E+04	6.093E+07	4.094E+03
2053	7.637E+04	6.115E+07	4.109E+03
2054	7.663E+04	6.137E+07	4.123E+03
2055	7.688E+04	6.156E+07	4.136E+03
2056	7.710E+04	6.174E+07	4.148E+03
2057	7.731E+04	6.190E+07	4.159E+03
2058	7.750E+04	6.206E+07	4.170E+03
2059	7.767E+04	6.220E+07	4.179E+03
2060	7.784E+04	6.233E+07	4.188E+03
2061	7.799E+04	6.245E+07	4.196E+03
2062	7.813E+04	6.256E+07	4.203E+03
2063	7.825E+04	6.266E+07	4.210E+03
2064	7.224E+04	5.784E+07	3.887E+03
2065	6.668E+04	5.340E+07	3.588E+03

Results (Continued)

Year	NMOC		
	(Mg/year)	(m3/year)	(av ft ³ /min)
2008	0	0	0
2009	7.148E+00	1.994E+03	1.340E-01
2010	1.305E+01	3.639E+03	2.445E-01
2011	1.872E+01	5.222E+03	3.509E-01
2012	2.527E+01	7.050E+03	4.737E-01
2013	3.034E+01	8.465E+03	5.687E-01
2014	3.522E+01	9.825E+03	6.601E-01
2015	4.114E+01	1.148E+04	7.712E-01
2016	4.993E+01	1.393E+04	9.359E-01
2017	5.744E+01	1.603E+04	1.077E+00
2018	6.789E+01	1.894E+04	1.273E+00
2019	7.565E+01	2.111E+04	1.418E+00
2020	8.193E+01	2.286E+04	1.536E+00
2021	8.475E+01	2.364E+04	1.589E+00
2022	8.883E+01	2.478E+04	1.665E+00
2023	9.598E+01	2.678E+04	1.799E+00
2024	1.026E+02	2.862E+04	1.923E+00
2025	1.087E+02	3.032E+04	2.037E+00
2026	1.143E+02	3.189E+04	2.143E+00
2027	1.195E+02	3.334E+04	2.240E+00
2028	1.243E+02	3.467E+04	2.330E+00
2029	1.287E+02	3.591E+04	2.413E+00
2030	1.328E+02	3.705E+04	2.489E+00
2031	1.366E+02	3.810E+04	2.560E+00
2032	1.400E+02	3.907E+04	2.625E+00
2033	1.433E+02	3.997E+04	2.685E+00
2034	1.462E+02	4.079E+04	2.741E+00
2035	1.490E+02	4.156E+04	2.792E+00
2036	1.515E+02	4.226E+04	2.840E+00
2037	1.538E+02	4.291E+04	2.883E+00
2038	1.560E+02	4.352E+04	2.924E+00
2039	1.580E+02	4.407E+04	2.961E+00
2040	1.598E+02	4.458E+04	2.995E+00
2041	1.615E+02	4.505E+04	3.027E+00
2042	1.631E+02	4.549E+04	3.057E+00
2043	1.645E+02	4.589E+04	3.084E+00
2044	1.658E+02	4.627E+04	3.109E+00
2045	1.671E+02	4.661E+04	3.132E+00
2046	1.682E+02	4.693E+04	3.153E+00
2047	1.693E+02	4.722E+04	3.173E+00
2048	1.702E+02	4.749E+04	3.191E+00
2049	1.711E+02	4.774E+04	3.207E+00
2050	1.719E+02	4.797E+04	3.223E+00
2051	1.727E+02	4.818E+04	3.237E+00
2052	1.734E+02	4.838E+04	3.250E+00
2053	1.741E+02	4.856E+04	3.263E+00
2054	1.746E+02	4.872E+04	3.274E+00
2055	1.752E+02	4.888E+04	3.284E+00
2056	1.757E+02	4.902E+04	3.294E+00
2057	1.762E+02	4.915E+04	3.303E+00
2058	1.766E+02	4.927E+04	3.311E+00
2059	1.770E+02	4.939E+04	3.318E+00
2060	1.774E+02	4.949E+04	3.325E+00
2061	1.777E+02	4.958E+04	3.332E+00
2062	1.780E+02	4.967E+04	3.337E+00
2063	1.783E+02	4.975E+04	3.343E+00
2064	1.646E+02	4.593E+04	3.086E+00
2065	1.520E+02	4.240E+04	2.849E+00

Smiths Creek Landfill Fugitive HAPs Emissions ROP Renewal Application

Fugitive Gas Production Rate (Year 2063) = 1,566,000 ft³/day = 16,187,766 m³/year
 (assumes 75% collection efficiency)

UNCONTROLLED LANDFILL GAS CONCENTRATIONS (a) - (SCC 50200602)

CAS number	COMPOUND	Concentration ppmv*	MOLECULAR WEIGHT	GRAVIMETRIC CONCENTRATION (mg/M ³)	POTENTIAL TO EMIT		
					HAPS (Mg/yr)	HAPS (lbs/hr)	HAPS (tons/yr)
71556	1,1,1-Trichloroethane (methyl chloroform)	0.48	133.42	2.62	0.0424	0.0107	0.0468
79345	1,1,2,2-Tetrachloroethane	1.11	167.86	7.62	0.1234	0.0311	0.1361
75343	1,1-Dichloroethane (ethylidene dichloride)	2.35	98.96	9.51	0.1540	0.0388	0.1699
75354	1,1-Dichloroethene (vinylidene chloride)	0.20	96.95	0.79	0.0128	0.0032	0.0142
107062	1,2-Dichloroethane (ethylene dichloride)	0.41	98.96	1.66	0.0269	0.0068	0.0296
78875	1,2-Dichloropropane (propylene dichloride)	0.18	112.99	0.83	0.0135	0.0034	0.0149
107131	Acrylonitrile	6.33	53.06	13.74	0.2224	0.0560	0.2453
75150	Carbon disulfide	0.58	76.14	1.81	0.0292	0.0074	0.0323
56235	Carbon tetrachloride	0.00	153.84	0.00	0.0000	0.0000	0.0000
463581	Carbonyl sulfide	0.49	60.07	1.20	0.0195	0.0049	0.0215
108907	Chlorobenzene	0.25	112.56	1.15	0.0186	0.0047	0.0206
75003	Chloroethane (ethyl chloride)	1.25	64.52	3.30	0.0534	0.0135	0.0589
67663	Chloroform	0.03	119.39	0.15	0.0024	0.0006	0.0026
75092	Dichloromethane (methylene chloride)	14.30	84.94	49.68	0.8042	0.2026	0.8873
100414	Ethylbenzene	4.61	106.16	20.02	0.3240	0.0816	0.3575
110543	Hexane	6.57	86.17	23.15	0.3748	0.0944	0.4135
108101	Methyl isobutyl ketone	1.87	100.07	7.65	0.1239	0.0312	0.1367
127184	Perchloroethylene (tetrachloroethene)	3.73	165.85	25.30	0.4096	0.1032	0.4519
79016	Trichloroethylene	2.82	131.39	15.15	0.2453	0.0618	0.2707
75014	Vinyl chloride	7.34	62.50	18.76	0.3037	0.0765	0.3351
71432	Benzene	1.91	78.11	6.10	0.0988	0.0249	0.1090
74873	Methyl chloride(Chloromethane)	1.21	50.49	2.50	0.0404	0.0102	0.0446
108883	Toluene	39.30	92.13	148.09	2.3972	0.6038	2.6448
1330207	Xylene (isomers and mixtures)	12.10	106.16	52.54	0.8505	0.2142	0.9383
	Mercury Compounds *	0.00	200.61	0.00	0.0000	0.0000	0.0000
Total HAPs:							7.38
Greatest Single HAP:							2.64
Total of all other HAPs:							4.74

*based on 11/98 AP-42 Factors for Landfill Gas

**FUGITIVE DUST EMISSIONS FROM PAVED ROADS
SMITHS CREEK LANDFILL SRN N6207
Smiths Creek, Michigan**

Reporting Year: **ROP RENEWAL APPLICATION**

Landfill Operation

312 days

Vehicle quantity

61,857 vehicles/yr = 138 vehicles/day

Average vehicle weight (tons)

16.01

Length of paved road (miles)

1.47

Fugitive Dust Emissions Equation

$$E_{ext} = [k(sL)^{0.91} * (W)^{1.02}] * (1 - (P/4N))$$

where:

E_{ext} = annual or other long-term average emission factor in the same units as k

P = number of "wet" days with at least 0.01 in of precipitation during the averaging period: 140 days^(a)

N = number of days in the averaging period: 365 days for annual

k = particle size multiplier for particle size range and units of interest: : PM10 = 0.0022 lb/VMT^(b)

sL = road surface silt loading (grams per square meter) (g/m²): 7.4^(c)

W = average weight (tons) of the vehicles traveling the road

PM 10 Uncontrolled Emissions

E_{ext}	PM 10 Emissions (lbs)	PM 10 Emissions (tons)
0.21	18,916	9.5

PM 10 Controlled Emissions

Control Device = watering of paved and unpaved roads

Tons per year * .80 control = controlled emissions

PM10 Uncontrolled emissions - controlled emissions = fugitive emissions

7.6 tpy

1.9 tpy

Notes:

(a) Source: AP-42 Figure 13.2.1-2

(b) Source: AP-42 Table 13.2-1.1

(c) Source: AP-42, Table 13.2.1-4

**2021 MAERS
FUGITIVE DUST EMISSIONS FROM UNPAVED ROADS
SMITHS CREEK LANDFILL SRN N6207
Smiths Creek, Michigan**

Reporting Year: **ROP RENEWAL APPLICATION**
Landfill Operation
 312 days

Vehicle quantity
 42,472 vehicles/yr = 109 vehicles/day

Average vehicle weight (tons)
 20.5

Length of unpaved road (miles)
 0.29

Uncontrolled Fugitive Dust Emissions Equation
 $E = k (s/12)^a (W/3)^b$

where:
 E = size-specific emission factor (lb/VMT)
 s = surface material silt content (%): 6.4^(c)
 k = empirical constant : PM10 = 1.5 lb/VMT^(b)
 a = empirical constant: PM10 = .9^(b)
 b = empirical constant: PM10 = .45^(b)
 W= average weight of vehicle fleet = 22.9 tons

E = 2.02

Uncontrolled Conditions with Natural Mitigation due to Precipitation
 $E_{ext} = E [(365-P)/365]$

where:
 E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT
 E = size-specific emission factor (lb/VMT)
 P = number of "wet" days with at least 0.01 in of precipitation during the averaging period: **140 days^(a)**

$E_{ext} = 1.25$

PM 10 Uncontrolled Emissions

E_{ext}	PM 10 Emissions (lbs)	PM 10 Emissions (tons)
1.25	15,349	7.7

PM 10 Controlled Emissions

Control Device = watering of paved and unpaved roads
 Tons per year * .8 control = controlled emissions
 PM10 Uncontrolled emissions - controlled emissions = fugitive emissions

6.1 tpy
1.5 tpy

Notes:
 (a) Source: AP-42 Figure 13.2.1-2
 (b) Source: AP-42 Table 13.2.2-2
 (c) Source: AP-42, Table 13.2.2-1

**Smiths Creek Landfill
Emission Estimate from Leachate Storage Tank**

The WATER9 model was used to estimate volatile organic emissions from the existing leachate storage tank at Smiths Creek Landfill located in Smiths Creek, Michigan. The tank option from the WATER9 model was used. The results are in the attached table.

Below is a list of input parameters and the basis for the information:

SITE OR COMMON PARAMETERS

Parameter	Value or Source	Basis
Wind velocity	462.31 cm/s (10.34 mph)	TANKS4.0.9d Meteorological Database for Smiths Creek, Michigan.
Wastewater temperature	9.2 °C (48.6°F)	TANKS 4.0.9d Meteorological Database for Smiths Creek, Michigan average annual outdoor temperature.
Total dissolved organics	Chemical-specific (see printout)	Site monitoring data, maximum detected concentration or limit selected.
Open surface area of tank	0.29 m ²	Based on a vent diameter of 2.0 ft (24 inches)
Density of liquid in tank	1 g/cc	Density of water, leachate expected to be essentially water.
Tank waste molecular weight	18 g/mol	Molecular weight of water, leachate expected to be essentially water.
Tank paint factor	1.58	Color: Black
Diurnal temperature change	10.6 °C (19.1°F)	TANKS 4.0.9d Meteorological Database, Difference in Daily Minimum and Maximum Temperature for Smiths Creek, Michigan.

TANK SPECIFIC PARAMETERS

One 100,000 gallons Capacity Leachate Storage Tank

Parameter	Value or Source	Basis
Wastewater flow rate	2.16 l/s	Flow rate of 18,000,000 gal/yr. Conservative estimate based on assumption of 50,000 gal/day.
Tank Diameter	12.80 m (42.0ft)	Estimated tank dimensions.
Tank Height	7.03 m (23.08ft)	Estimated tank dimensions.
Vapor Space Height	3.51 (11.5ft)	Estimate, based on 50% of tank height.

Total VOM and total HAP emissions are attached.

**Smiths Creek Landfill
Air Emissions Estimate - Leachate Storage Tank**

Compound	HAP	VOM	Maximum Loading* (mg/L)	Leachate Storage Tank	
				Air Emissions	
				(g/s)**	(ton/yr)
1,1-Dichloroethane	X	X	0.0025	4.95E-09	1.72E-07
1,1-Dichloroethene	X	X	0.0025	4.97E-09	1.73E-07
1,1,1-Trichloroethane		X	0.0025	4.62E-09	1.60E-07
1,1,2-Trichloroethane	X	X	0.0025	4.40E-09	1.53E-07
1,1,1,2-Tetrachloroethane		X	0.0025	4.33E-09	1.50E-07
1,1,2,2-Tetrachloroethane	X	X	0.0025	3.90E-09	1.35E-07
1,2-Dichlorobenzene		X	0.0025	4.24E-09	1.47E-07
1,2-Dichloroethane		X	0.0025	4.70E-09	1.63E-07
1,2-Dichloropropane	X	X	0.0025	4.55E-09	1.58E-07
1,4-Dichlorobenzene	X	X	0.0025	4.34E-09	1.51E-07
1,2,3- Trichloropropane		X	0.0025	4.04E-09	1.40E-07
Benzene	X	X	0.0069	1.35E-08	4.69E-07
Bromodichloromethane		X	0.0025	3.99E-09	1.39E-07
Bromoform	X	X	0.0025	3.81E-09	1.32E-07
Bromomethane (Methyl Bromide)	X	X	0.0125	2.64E-08	9.17E-07
Carbon Tetrachloride	X	X	0.0025	4.63E-09	1.61E-07
Chlorobenzene	X	X	0.0025	4.54E-09	1.58E-07
Chlorodibromomethane		X	0.0025	3.70E-09	1.29E-07
Chloroethane	X	X	0.0125	2.59E-08	9.00E-07
Chloroform	X	X	0.0025	4.85E-09	1.68E-07
Chloromethane (Methyl Chloride)	X	X	0.0125	2.04E-08	7.09E-07
Dibromomethane		X	0.0025	3.43E-09	1.19E-07
cis-1,3-Dichloropropene	X	X	0.0025	4.78E-09	1.66E-07
Ethylbenzene	X	X	0.0205	3.59E-08	1.25E-06
Iodomethane		X	0.0025	4.66E-09	1.62E-07
Methylene Chloride (Dichloromethane)	X	X	0.0125	2.58E-08	8.96E-07
Styrene	X	X	0.0025	4.35E-09	1.51E-07
Tetrachloroethene	X	X	0.0025	4.48E-09	1.56E-07
Toluene	X	X	0.0182	3.32E-08	1.15E-06
cis-1,2-Dichloroethene		X	0.0025	4.18E-09	1.45E-07
trans-1,2-Dichloroethene		X	0.0025	5.24E-09	1.82E-07
trans-1,3-Dichloropropene	X	X	0.0025	4.74E-09	1.65E-07
Trichloroethene	X	X	0.0025	4.68E-09	1.63E-07
Trichlorofluoromethane		X	0.0025	4.83E-09	1.68E-07
Vinyl Chloride	X	X	0.0025	5.34E-09	1.85E-07
Xylenes, Total	X	X	0.056	1.06E-07	3.68E-06
Total VOM			2.22E-01	4.12E-07	1.43E-05
Total HAPs			1.92E-01	3.60E-07	1.25E-05

*Based on 2/8/2022 leachate analytical results. Maximum Loading value represents 50% of the detection limit for all compounds except Benzene, Ethylbenzene, Toluene, and Xylene.

**from Water9 Modeling Results

Project C:\Program Files (x86)\Wastewater treatment models v3\SmithsCreek 100k T
 COMPOUND

COMPOUND	RATE (g/s)	Fraction			
		Air	Removal	Exit	Adsorb
BENZENE	1.35E-08	.00091	.	.9991	0.0000
BROMODICHLOROMETHANE	3.99E-09	.00074	.	.9993	0.0000
BROMOFORM (tribromomethane)	3.81E-09	.0007	.	.9993	0.0000
BROMOMETHANE	2.64E-08	.00098	.	.999	0.0000
CARBON TETRACHLORIDE	4.63E-09	.00086	.	.9991	0.0000
CHLOROBENZENE	4.54E-09	.00084	.	.9992	0.0000
CHLOROETHANE (ethyl chloride)	2.59E-08	.00096	.	.999	0.0000
CHLOROETHYLENE (vinyl chloride)	5.34E-09	.00099	.	.999	0.0000
CHLOROFORM	4.85E-09	.0009	.	.9991	0.0000
DIBROMOCHLOROMETHANE	3.70E-09	.00069	.	.9993	0.0000
DIBROMOMETHANE	3.43E-09	.00064	.	.9994	0.0000
1,2 DICHLOROBENZENE (-o)	4.24E-09	.00079	.	.9992	0.0000
1,4 DICHLOROBENZENE (-p)	4.34E-09	.0008	.	.9992	0.0000
DICHLOROETHANE(1,1) ethylidenedichlorid	4.95E-09	.00092	.	.9991	0.0000
DICHLOROETHANE(1,2)	4.70E-09	.00087	.	.9991	0.0000
1,1 DICHLOROETHENE vinylidene chloride	4.97E-09	.00092	.	.9991	0.0000
1,2 DICHLOROETHENE trans	5.24E-09	.00097	.	.999	0.0000
DICHLOROETHYLENE(1,2) cis	4.18E-09	.00077	.	.9992	0.0000
DICHLOROPROPANE 1,2	4.55E-09	.00084	.	.9992	0.0000
ETHYLBENZENE	3.59E-08	.00081	.	.9992	0.0000
FREON 11, TRICHLOROFLUOROMETHANE	4.83E-09	.00089	.	.9991	0.0000
CHLOROMETHANE (methylchloride)	2.04E-08	.00075	.	.9992	0.0000
METHYLENE CHLORIDE, dichloromethane	2.58E-08	.00096	.	.999	0.0000
METHYL IODIDE	4.66E-09	.00086	.	.9991	0.0000
ETHENYLBENZENE (styrene)	4.35E-09	.00081	.	.9992	0.0000
TETRACHLOROETHANE(1,1,2,2)	3.90E-09	.00072	.	.9993	0.0000
TETRACHLOROETHANE(1,1,1,2)	4.33E-09	.0008	.	.9992	0.0000
TETRACHLOROETHENE	4.48E-09	.00083	.	.9992	0.0000
TOLUENE	3.32E-08	.00084	.	.9992	0.0000
1,1,2 TRICHLOROETHANE	4.40E-09	.00081	.	.9992	0.0000
TRICHLOROETHANE 1,1,1 methyl chloroform	4.62E-09	.00086	.	.9991	0.0000
TRICHLOROETHYLENE	4.68E-09	.00087	.	.9991	0.0000
TRICHLOROPROPANE(1,2,3)	4.04E-09	.00075	.	.9993	0.0000
XYLENE	1.06E-07	.00088	.	.9991	0.0000
cis 1,3 DICHLOROPROPENE	4.78E-09	.00088	.	.9991	0.0000
trans 1,3 DICHLOROPROPENE	4.74E-09	.00088	.	.9991	0.0000
TOTAL ALL COMPOUNDS	4.12E-07	g/s air emissions			
TOTAL ALL COMPOUNDS	1.30E-05	Mg/yr air emissions			

Applicability of NSPS Subpart Kb to the Proposed Leachate Storage Tanks

The NSPS for Volatile Organic Liquid Storage Vessels (Subpart Kb) has three applicability thresholds. Tanks with a capacity less than 19,815 gallons (75 cubic meters) are not subject to the NSPS. Tanks larger than 19,815 gallons but less than 39,894 gallons (151 cubic meters) are not affected if the VOC vapor pressure is less than 15.0 kPa (112.5 mm Hg). Tanks larger than 39,894 gallons are affected if the VOC vapor pressure is greater than 3.5 kPa (26.26 mm Hg).

The leachate storage tank at Smiths Creek Landfill has a capacity of approximately 100,000 gallons. The leachate VOC vapor pressure was calculated and demonstrates that NSPS Subpart Kb does not apply to this tank. The vapor pressure of leachate that is stored in the tank is 1.29×10^{-5} kPa, based on concentrations of VOC from the leachate analytical data. This is below the 3.5 kPa limit allowed for the tank size.

Smiths Creek Leacachte Storage Tank NSPS Subpart Kb Applicability

Leachate VOC Partial Pressure Calculation

Compound	Maximum Concentration (ppmw)	Antoine Coefficients			Pure Vapor Pressure (mm Hg)	VOC Partial Pressures (kPa)	
		A	B	C		(mm Hg)	(kPa)
1,1-Dichloroethane	0.0025	6.99276	1176.864	228.8380	143.358	3.58E-07	4.78E-08
1,1-Dichloroethene	0.0025	6.97220	1099.400	237.2000	402.070	1.01E-06	1.34E-07
1,1,1-Trichloroethane	0.0025	6.82740	1147.140	218.5387	80.329	2.01E-07	2.68E-08
1,1,2-Trichloroethane	0.0025	7.19210	1480.319	229.0943	13.035	3.26E-08	4.34E-09
1,1,1,2-Tetrachloroethane	0.0025	6.89800	1365.880	209.7400	6.410	1.60E-08	2.14E-09
1,1,2,2-Tetrachloroethane	0.0025	6.89379	1354.506	192.4300	2.229	5.57E-09	7.43E-10
1,2-Dichlorobenzene	0.0025	6.88255	1537.672	205.2496	0.768	1.92E-09	2.56E-10
1,2-Dichloroethane	0.0025	7.06839	1292.540	225.0000	46.942	1.17E-07	1.56E-08
1,2-Dichloropropane	0.0025	6.98000	1380.100	222.8000	14.593	3.65E-08	4.86E-09
1,4-Dichlorobenzene	0.0025	7.19900	1690.291	218.0900	0.855	2.14E-09	2.85E-10
1,2,3- Trichloropropane	0.0025	6.90300	788.200	243.2300	6994.566	1.75E-05	2.33E-06
Benzene	0.0069	6.90500	1211.033	220.7900	57.282	3.95E-07	5.27E-08
Bromodichloromethane	0.0025	7.96550	1846.561	273.1600	35.176	8.79E-08	1.17E-08
Bromoform	0.0025	7.98810	2158.654	273.1600	3.047	7.62E-09	1.02E-09
Bromomethane (Methyl Bromide)	0.0125	7.56631	1301.449	273.1600	1101.670	1.38E-05	1.84E-06
Carbon Tetrachloride	0.0025	6.93390	1242.430	230.0000	71.185	1.78E-07	2.37E-08
Chlorobenzene	0.0025	6.97800	1431.050	217.5500	6.472	1.62E-08	2.16E-09
Chlorodibromomethane	0.0025	7.28880	1733.834	273.1600	18.257	4.56E-08	6.09E-09
Chloroethane	0.0125	6.98600	1030.010	238.6100	825.246	1.03E-05	1.38E-06
Chloroform	0.0025	6.49300	929.440	196.0300	119.739	2.99E-07	3.99E-08
Chloromethane (Methyl Chloride)	0.0125	7.09300	948.580	249.3400	3145.683	3.93E-05	5.24E-06
Dibromomethane	0.0025	1.68123	0.000	0.0000	47.999	1.20E-07	1.60E-08
cis-1,3-Dichloropropene	0.0025	6.80731	1327.640	230.1337	24.003	6.00E-08	8.00E-09
Ethylbenzene	0.0205	6.97500	1424.255	213.2100	5.252	1.08E-07	1.44E-08
Iodomethane	0.0025	7.65738	1507.300	273.1600	261.527	6.54E-07	8.72E-08
Methylene Chloride (Dichloromethane)	0.0125	6.96841	1074.291	222.9950	278.603	3.48E-06	4.64E-07
Styrene	0.0025	6.94536	1437.432	208.3800	3.133	7.83E-09	1.04E-09
Tetrachloroethene	0.0025	6.97600	1386.920	217.5300	9.969	2.49E-08	3.32E-09
Toluene	0.0182	6.95400	1344.800	219.4800	16.088	2.93E-07	3.90E-08
cis-1,2-Dichloroethene	0.0025	7.02230	1205.400	230.6000	127.147	3.18E-07	4.24E-08
trans-1,2-Dichloroethene	0.0025	6.96510	1141.900	231.9000	214.173	5.35E-07	7.14E-08
trans-1,3-Dichloropropene	0.0025	6.80731	1327.640	230.1337	24.003	6.00E-08	8.00E-09
Trichloroethene	0.0025	6.51800	1018.600	192.7000	39.992	1.00E-07	1.33E-08
Trichlorofluoromethane	0.0025	6.88400	1043.004	236.8800	543.109	1.36E-06	1.81E-07
Vinyl Chloride	0.0025	6.99070	969.052	250.5856	2163.125	5.41E-06	7.21E-07
Xylenes, Total	0.056	7.94014	2090.317	273.1600	4.715	2.64E-07	3.52E-08
Total						9.65E-05	1.29E-05
Kb Limit							3.5

Notes:

Antoine coefficients obtained from 1) WATER9 property database 2) EPA Air Emissions Models for Waste and Wastewater (EPA-453/R-94-080A-1994)

High monthly average temperature for Detroit, MI is 58.1°F or 14.5 °C, obtained from Tanks 4.0.9d weather database.

Sample Calculation:

TOLUENE vapor pressure (mm Hg) = $10^{(A - (B/(T+C)))}$ = $10^{(6.954 - (1344.8/(219.48+14.5)))}$ = 16.088 mm Hg

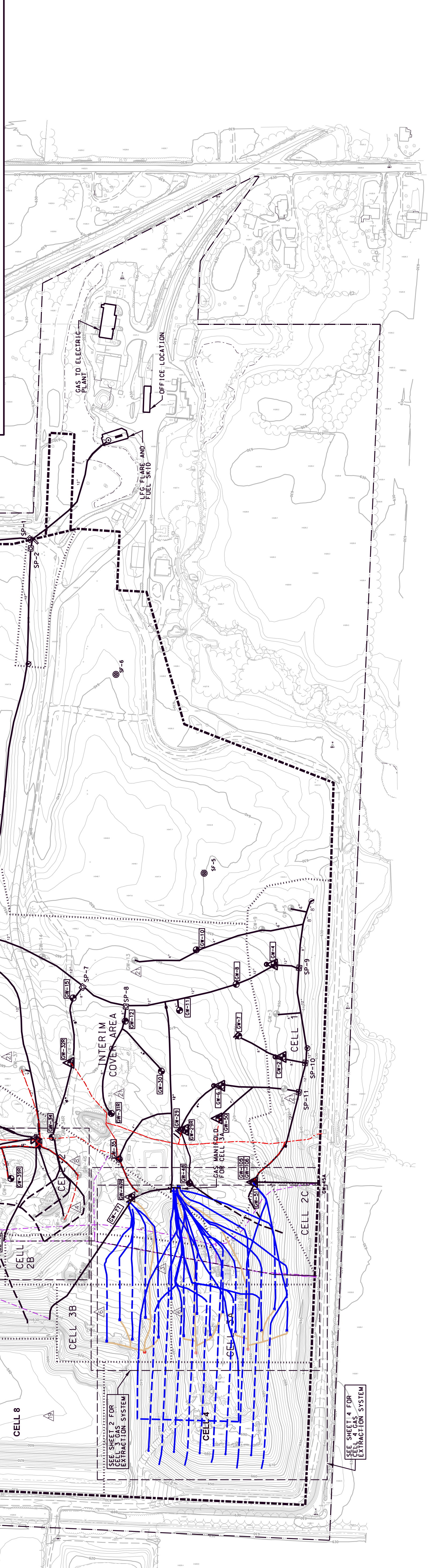
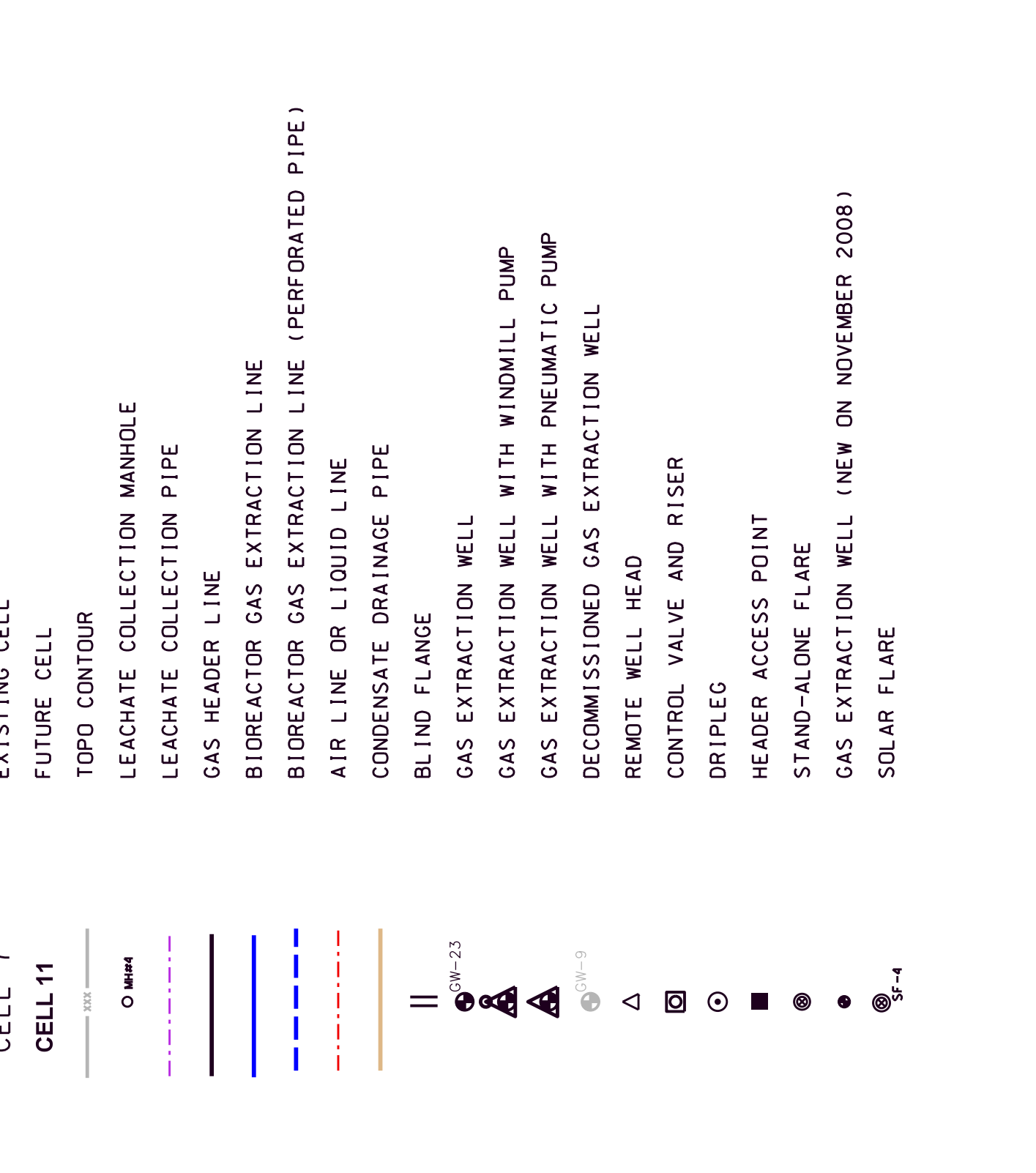
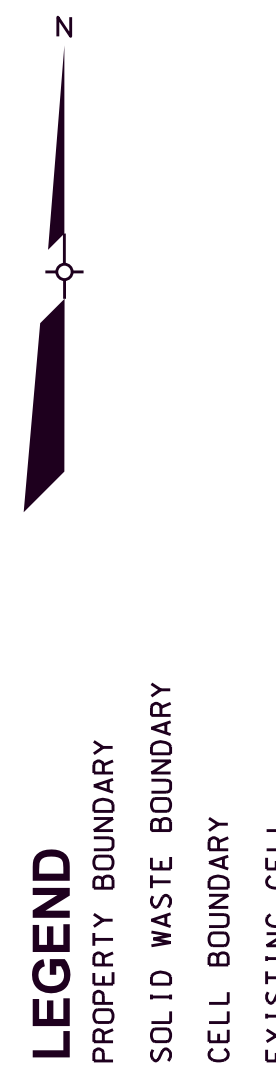
Conversion factor = 0.13332 kPa/mm Hg

Appendix B

APPENDIX B

Site Plan Map

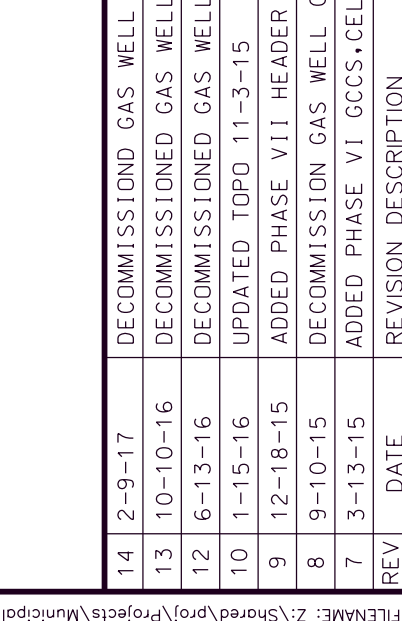
REV	DATE	REVISION DESCRIPTION
6	9-11-14	BACK IN COMPLIANCE EXTRACTION LINES GW-53 AND GW-64
5	3-11-14	DECOMMISSIONED GW-31, GW-44 AND GW-47; UPDATED TOP/CELL BOUNDARY
4	8-15-13	ADD GAS LINE IN CELL 3B AND PHASE V WELLS, DECOMMISSIONED GW-33 AND
3	3-11-13	ADDED GAS LINE GW-62
2	2-6-13	UPDATED AERIAL TOPO
1	9-11-12	DECOMMISSIONED WELL GW-27



REV	DATE	DESCRIPTION	APP
14	2-9-17	DECOMMISSIONED GAS WELL GW-39; UPDATED TOPO	BDA
13	10-10-16	DECOMMISSIONED GAS WELL GW-17	BDA
12	6-13-16	DECOMMISSIONED GAS WELLS GW-18 AND GW-34R	DH
10	1-15-16	UPDATED TOPO 11-3-15	BDA
9	12-18-15	ADDED PHASE VII - HEADER AND GAS WELLS	BDA
8	9-10-15	DECOMMISSION GAS WELL GW-46	BDA
7	3-13-15	ADDED PHASE VI - COCS-CELL 7B TEMPORARY-HEADER AND UPDATED TOPO	BDA
6	9-11-14	ADDED PHASE V - COCS-CELL 7A TEMPORARY-HEADER AND UPDATED TOPO	BDA
5	3-11-14	ADDED PHASE IV - COCS-CELL 7C TEMPORARY-HEADER AND UPDATED TOPO	BDA
4	8-15-13	ADDED PHASE III - COCS-CELL 7D TEMPORARY-HEADER AND UPDATED TOPO	BDA
3	3-11-13	ADDED PHASE II - COCS-CELL 7E TEMPORARY-HEADER AND UPDATED TOPO	BDA
2	2-6-13	ADDED PHASE I - COCS-CELL 7F TEMPORARY-HEADER AND UPDATED TOPO	BDA
1	9-11-12	ADDED PHASE 0 - COCS-CELL 7G TEMPORARY-HEADER AND UPDATED TOPO	BDA
0			

NOTES:

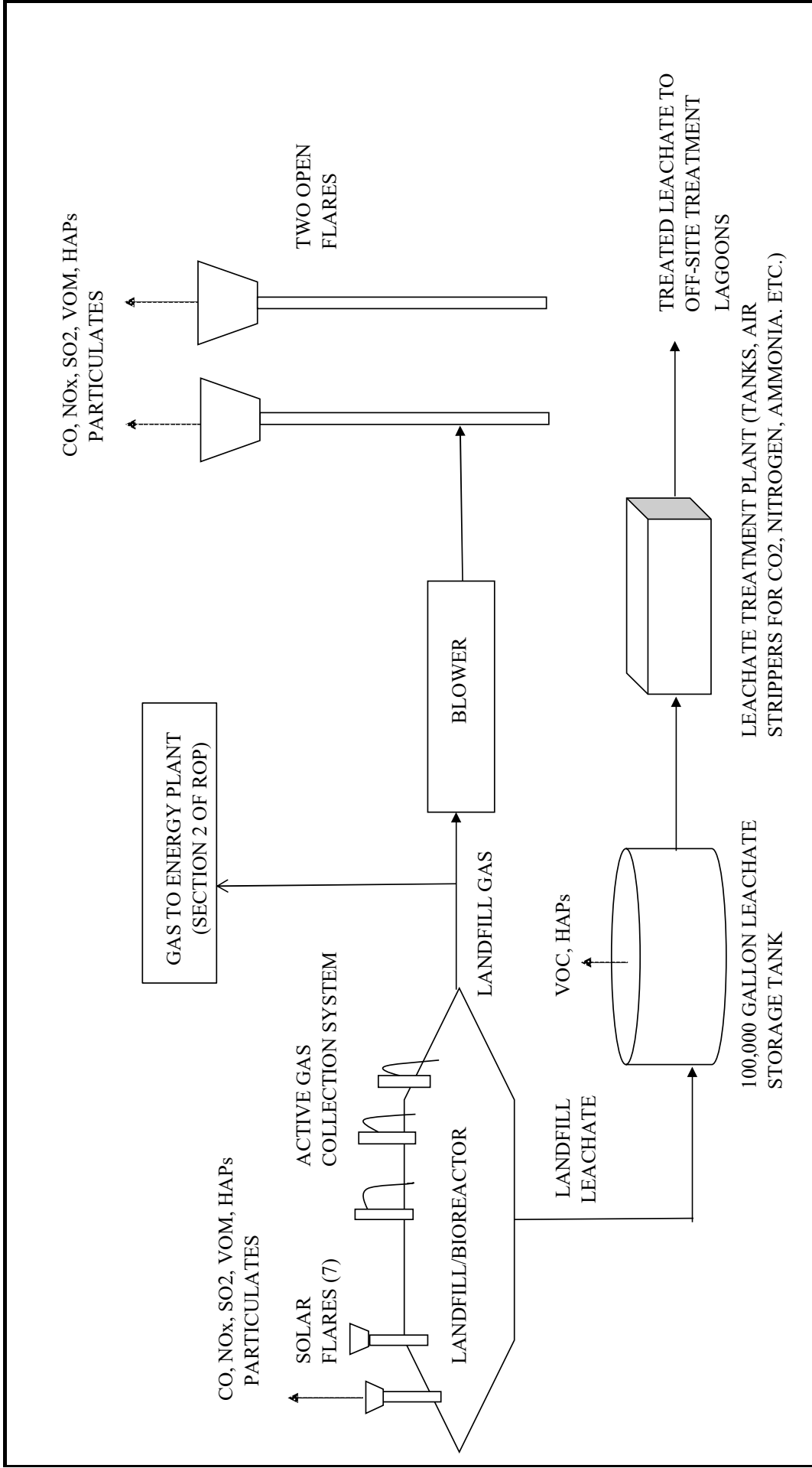
- AERIAL TOPOGRAPHIC MAP SHOWN WAS DONE BY DRONEVIEW TECHNOLOGIES. DATE OF AERIAL: NOVEMBER 24, 2019.



Appendix C

APPENDIX C

Process Flow Diagram



SMITHS CREEK LANDFILL
 RENEWABLE OPERATING PERMIT APPLICATION
 SMITHS CREEK, MICHIGAN

DES BY: LLN DATE: NOVEMBER 2022

PREPARED BY:
 Environmental Information Logistics
 130 E. Main St. Caledonia, MI 49316

PROCESS FLOW DIAGRAM
 SMITHS CREEK LANDFILL



RENEWABLE OPERATING PERMIT RENEWAL APPLICATION FORM

This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Refer to instructions for additional information to complete the Renewable Operating Permit Renewal Application Form.

GENERAL INSTRUCTIONS

This application form should be submitted as part of an administratively complete application package for renewal of a Renewable Operating Permit (ROP). This application form consists of nine parts. Parts A – H must be completed for all applications and must also be completed for each section of a sectioned ROP. Answer all questions in all parts of the form unless directed otherwise. Detailed instructions for this application form can be found at <http://michigan.gov/air> (select the Permits Tab, “Renewable Operating Permits (ROP)/Title V”, then “ROP Forms & Templates”).

PART A: GENERAL INFORMATION

Enter information about the source, owner, contact person and the responsible official.

SOURCE INFORMATION

SRN N6207	SIC Code 4953	NAICS Code 562212	Existing ROP Number MI-ROP-N6207-2012	Section Number (if applicable) 1
Source Name Smiths Creek Landfill				
Street Address 6779 Smiths Creek Rd.				
City Smiths Creek	State MI	ZIP Code 48074	County St. Clair County	
Section/Town/Range (if address not available)				
Source Description Smiths Creek Landfill is a type II municipal solid waste landfill with an active gas collection and control system and 7 stand alone solar flares used for the control of landfill gas generated by waste decomposition.				
<input type="checkbox"/> Check here if any of the above information is different than what appears in the existing ROP. Identify any changes on the marked-up copy of your existing ROP.				

OWNER INFORMATION

Owner Name St. Clair County	Section Number (if applicable) N/A			
Mailing address (<input type="checkbox"/> check if same as source address) 200 Grand River Avenue, Suite 201				
City Port Huron	State MI	ZIP Code 48060	County St. Clair	Country USA

Check here if any information in this ROP renewal application is confidential. Confidential information should be identified on an Additional Information (AI-001) Form.

PART A: GENERAL INFORMATION (continued)

At least one contact and responsible official must be identified. Additional contacts and responsible officials may be included if necessary.

CONTACT INFORMATION

Contact 1 Name Matthew Williams		Title Landfill Manager		
Company Name & Mailing address (<input checked="" type="checkbox"/> check if same as source address) 6779 Smiths Creek Rd.				
City Smiths Creek	State MI	ZIP Code 48074	County St. Clair	Country USA
Phone number 810-989-6979		E-mail address mwilliams@stclaircounty.org		

Contact 2 Name (optional)		Title		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address)				
City	State	ZIP Code	County	Country
Phone number	E-mail address			

RESPONSIBLE OFFICIAL INFORMATION

Responsible Official 1 Name Matthew Williams		Title Landfill Manager		
Company Name & Mailing address (<input checked="" type="checkbox"/> check if same as source address) 6779 Smiths Creek Rd.				
City Smiths Creek	State MI	ZIP Code 48074	County St. Clair	Country USA
Phone number 810-989-6979		E-mail address mwilliams@stclaircounty.org		

Responsible Official 2 Name (optional)		Title		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address)				
City	State	ZIP Code	County	Country
Phone number	E-mail address			

<input type="checkbox"/> Check here if an AI-001 Form is attached to provide more information for Part A. Enter AI-001 Form ID:

PART B: APPLICATION SUBMITTAL and CERTIFICATION by Responsible Official

Identify the items that are included as part of your administratively complete application in the checklist below. For your application to be complete, it must include information necessary to evaluate the source and to determine all applicable requirements. Answer the compliance statements as they pertain to all the applicable requirements to which the source is subject. The source's Responsible Official must sign and date this form.

Listing of ROP Application Contents. Check the box for the items included with your application.	
<input checked="" type="checkbox"/> Completed ROP Renewal Application Form (and any AI-001 Forms) (required)	<input type="checkbox"/> Compliance Plan/Schedule of Compliance
<input checked="" type="checkbox"/> Mark-up copy of existing ROP using official version from the AQD website (required)	<input type="checkbox"/> Stack information
<input type="checkbox"/> Copies of all Permit(s) to Install (PTIs) that have not been incorporated into existing ROP (required)	<input type="checkbox"/> Acid Rain Permit Initial/Renewal Application
<input checked="" type="checkbox"/> Criteria Pollutant/Hazardous Air Pollutant (HAP) Potential to Emit Calculations	<input type="checkbox"/> Cross-State Air Pollution Rule (CSAPR) Information
<input type="checkbox"/> MAERS Forms (to report emissions not previously submitted)	<input type="checkbox"/> Confidential Information
<input type="checkbox"/> Copies of all Consent Order/Consent Judgments that have not been incorporated into existing ROP	<input checked="" type="checkbox"/> Paper copy of all documentation provided (required)
<input type="checkbox"/> Compliance Assurance Monitoring (CAM) Plan	<input checked="" type="checkbox"/> Electronic documents provided (optional)
<input type="checkbox"/> Other Plans (e.g., Malfunction Abatement, Fugitive Dust, Operation and Maintenance, etc.)	<input type="checkbox"/> Other, explain: Copies of Emergency Generator specifications

Compliance Statement	
This source is in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
This source will continue to be in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
This source will meet in a timely manner applicable requirements that become effective during the permit term.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The method(s) used to determine compliance for each applicable requirement is/are the method(s) specified in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and all other applicable requirements not currently contained in the existing ROP.	
If any of the above are checked No, identify the emission unit(s) or flexible group(s) affected and the specific condition number(s) or applicable requirement for which the source is or will be out of compliance at the time of issuance of the ROP renewal on an AI-001 Form. Provide a compliance plan and schedule of compliance on an AI-001 Form.	

Name and Title of the Responsible Official (Print or Type)	
Matthew B. Williams	Landfill Director
<i>As a Responsible Official, I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.</i>	
_____	_____
Signature of Responsible Official	Date

PART C: SOURCE REQUIREMENT INFORMATION

Answer the questions below for specific requirements or programs to which the source may be subject.

C1.	Actual emissions and associated data from all emission units with applicable requirements (including those identified in the existing ROP, Permits to Install and other equipment that have not yet been incorporated into the ROP) are required to be reported in MAERS. Are there any emissions and associated data that have not been reported in MAERS for the most recent emissions reporting year? If Yes , identify the emission unit(s) that was/were not reported in MAERS on an AI-001 Form. Applicable MAERS form(s) for unreported emission units must be included with this application.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C2.	Is this source subject to the federal regulations on ozone-depleting substances? (40 CFR Part 82)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C3.	Is this source subject to the federal Chemical Accident Prevention Provisions? (Section 112(r) of the Clean Air Act Amendments, 40 CFR Part 68) If Yes , a Risk Management Plan (RMP) and periodic updates must be submitted to the USEPA. Has an updated RMP been submitted to the USEPA?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C4.	Has this stationary source added or modified equipment since the last ROP renewal that changes the potential to emit (PTE) for criteria pollutant (CO, NO _x , PM ₁₀ , PM _{2.5} , SO ₂ , VOC, lead) emissions? If Yes , include potential emission calculations (or the PTI and/or ROP revision application numbers, or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. If No , criteria pollutant potential emission calculations do not need to be included.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C5.	Has this stationary source added or modified equipment since the last ROP renewal that changes the PTE for hazardous air pollutants (HAPs) regulated by Section 112 of the federal Clean Air Act? If Yes , include potential emission calculations (or the PTI and/or ROP revision application numbers or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. Fugitive emissions must be included in HAP emission calculations. If No , HAP potential emission calculations do not need to be included.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C6.	Are any emission units subject to the Cross-State Air Pollution Rule (CSAPR)? If Yes , identify the specific emission unit(s) subject to CSAPR on an AI-001 Form.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C7.	Are any emission units subject to the federal Acid Rain Program? If Yes , identify the specific emission unit(s) subject to the federal Acid Rain Program on an AI-001 Form. Is an Acid Rain Permit Renewal Application included with this application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C8.	Are any emission units identified in the existing ROP subject to compliance assurance monitoring (CAM)? If Yes , identify the specific emission unit(s) subject to CAM on an AI-001 Form. If a CAM plan has not been previously submitted to EGLE, one must be included with the ROP renewal application on an AI-001 Form. If the CAM Plan has been updated, include an updated copy. Is a CAM plan included with this application? If a CAM Plan is included, check the type of proposed monitoring included in the Plan: 1. Monitoring proposed by the source based on performance of the control device, or 2. Presumptively Acceptable Monitoring, if eligible	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/>
C9.	Does the source have any plans such as a malfunction abatement plan, fugitive dust plan, operation/maintenance plan, or any other monitoring plan that is referenced in an existing ROP, Permit to Install requirement, or any other applicable requirement? If Yes , then a copy must be submitted as part of the ROP renewal application.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C10.	Are there any specific requirements that the source proposes to be identified in the ROP as non-applicable? If Yes , then a description of the requirement and justification must be submitted as part of the ROP renewal application on an AI-001 Form.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/>	Check here if an AI-001 Form is attached to provide more information for Part C. Enter AI-001 Form ID: AI-Part-C4	

PART D: PERMIT TO INSTALL (PTI) EXEMPT EMISSION UNIT INFORMATION

Review all emission units at the source and answer the question below.

D1. Does the source have any emission units that do not appear in the existing ROP but are required to be listed in the ROP application under R 336.1212(4) (Rule 212(4)) of the Michigan Air Pollution Control Rules? If Yes, identify the emission units in the table below. Yes No

If No, go to Part E.

Note: Emission units that are subject to process specific emission limitations or standards, even if identified in Rule 212, must be captured in either Part G or H of this application form. Identical emission units may be grouped (e.g. PTI exempt Storage Tanks).

Emission Unit ID	Emission Unit Description	Rule 212(4) Citation [e.g. Rule 212(4)(c)]	Rule 201 Exemption Rule Citation [e.g. Rule 282(2)(b)(i)]
Septage Building Boiler	Check GHG for fuel. 0.1 mmbtu/hour capacity	212(4)(c)	282(2)(b)(i)
Scale House/Office Heater	Natural Gas Heater – 0.1 mmbtu/hour capacity	212(4)(c)	282(2)(b)(i)
Shop Comfort Heater - Propane	Propane heater < 50 mmbtu/hr	212(4)(c)	282(2)(b)(i)
Shop Hot Water Heater	Propane-fueled hot water heater 0.04 mmbtu/hr	212(4)(c)	282(2)(b)(i)
Leachate Building Heaters	Check GHG for fuel. UH1&2: 0.135 mmbtu/hr, UH4,5,6&7: 0.26 mmbtu/hr	212(4)(c)	282(2)(b)(i)
Pretreatment Building	Check GHG for fuel. UH3: 0.3 mmbtu/hr	212(4)(c)	282(2)(b)(i)
Leachate Storage Tank	100,000 gallon aboveground leachate storage tank	212(3)(f)	285(2)(aa)
Propane Storage Tank	500 gallon propane tank (outside shop building)	212(4)(d)	284(2)(b)
Used Oil Tank	250 gallon used oil tank in shop	212(4)(d)	284(2)(i)
Grinder	Grinder equipment in shop	212(4)(e)	285(2)(l)(vi)
Shop Comfort Heater – Used Oil	175,000 btu/hour used oil furnace – combusts oil generated from on-site equipment	212(4)(c)	282(2)(b)(iv)

Comments:

Check here if an AI-001 Form is attached to provide more information for Part D. Enter AI-001 Form ID:

PART E: EXISTING ROP INFORMATION

Review all emission units and applicable requirements (including any source wide requirements) in the existing ROP and answer the questions below as they pertain to all emission units and all applicable requirements in the existing ROP.

<p>E1. Does the source propose to make any additions, changes or deletions to terms, conditions and underlying applicable requirements as they appear in the existing ROP? If <u>Yes</u>, identify changes and additions on Part F, Part G and/or Part H.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>E2. For each emission unit(s) identified in the existing ROP, <u>all</u> stacks with applicable requirements are to be reported in MAERS. Are there any stacks with applicable requirements for emission unit(s) identified in the existing ROP that were <u>not</u> reported in the most recent MAERS reporting year? If <u>Yes</u>, identify the stack(s) that was/were not reported on applicable MAERS form(s).</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>E3. Have any emission units identified in the existing ROP been modified or reconstructed that required a PTI? If <u>Yes</u>, complete Part F with the appropriate information.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>E4. Have any emission units identified in the existing ROP been dismantled? If <u>Yes</u>, identify the emission unit(s) and the dismantle date in the comment area below or on an AI-001 Form.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>Comments:</p> <p>In response to E1 - the facility was incorrectly categorized as being subject to the Landfill NSPS in the previous renewal application (40 CFR 60 Subpart XXX) since the prior air consultant thought that construction of a landfill cell permitted prior to July 17, 2014 triggered XXX applicability. Since that is not the case, the landfill is actually subject to 40 CFR 62 Subpart OOO (Federal Plan), promulgated May 31, 2021 since construction of the last expansion increasing permitted airspace was initiated prior to July 17, 2014. The landfill is considered a "Legacy Controlled Landfill" under the Federal Plan. Additionally, the Landfill NESHAP (40 CFR 63 Subpart AAAA) was revised on March 26, 2020. This regulation became effective on September 27, 2021 and replaces all monitoring, operational and compliance standards of the Federal Plan, and some recordkeeping and reporting requirements.</p> <p>EGLE has provided AQD template tables for both the revised Landfill NESHAP and the Federal Plan. These templates have been marked up to include only those provisions that continue to be applicable to Smiths Creek Landfill after September 27, 2021. The templates were also marked up to include the solar flares, which are not typical control devices and were not originally included in the templates. The existing template table for 40 CFR 60 Subpart WWW that is in the current ROP should be removed.</p>	
<p><input type="checkbox"/> Check here if an AI-001 Form is attached to provide more information for Part E. Enter AI-001 Form ID:</p>	

PART F: PERMIT TO INSTALL (PTI) INFORMATION

Review all emission units and applicable requirements at the source and answer the following questions as they pertain to all emission units with PTIs. Any PTI(s) identified below must be attached to the application.

F1. Has the source obtained any PTIs where the applicable requirements from the PTI have not been incorporated into the existing ROP? If Yes, complete the following table. Yes No
 If No, go to Part G.

Permit to Install Number	Emission Units/Flexible Group ID(s)	Description (Include Process Equipment, Control Devices and Monitoring Devices)	Date Emission Unit was Installed/ Modified/ Reconstructed
N/A – exempt per 336.128(aa)	EUVENTFLARE	One (1) additional solar vent flare was added to the passive GCCS to control LFG emissions from the Cell 7 leachate sump. Notification of off-permit change submitted 9/8/2022.	9/21/2022

F2. Do any of the PTIs listed above change, add, or delete terms/conditions to **established emission units** in the existing ROP? If Yes, identify the emission unit(s) or flexible group(s) affected in the comments area below or on an AI-001 Form and identify all changes, additions, and deletions in a mark-up of the existing ROP. Yes No

F3. Do any of the PTIs listed above identify **new emission units** that need to be incorporated into the ROP? If Yes, submit the PTIs as part of the ROP renewal application on an AI-001 Form, and include the new emission unit(s) or flexible group(s) in the mark-up of the existing ROP. Yes No
N/A – no PTI was required since this type of small flare is exempt.

F4. Are there any stacks with applicable requirements for emission unit(s) identified in the PTIs listed above that were not reported in MAERS for the most recent emissions reporting year? If Yes, identify the stack(s) that were not reported on the applicable MAERS form(s). Yes No

F5. Are there any proposed administrative changes to any of the emission unit names, descriptions or control devices in the PTIs listed above for any emission units not already incorporated into the ROP? If Yes, describe the changes on an AI-001 Form. **See permit Mark-up.** Yes No

Comments: The solar flare is equipped with a small blower (unlike the other solar flares) to “actively” extract LFG rather than combust it passively.

Check here if an AI-001 Form is attached to provide more information for Part F. Enter AI-001 Form ID:

PART G: EMISSION UNITS MEETING THE CRITERIA OF RULES 281(2)(h), 285(2)(r)(iv), 287(2)(c), OR 290

Review all emission units and applicable requirements at the source and answer the following questions.

G1. Does the source have any new and/or existing emission units which do not already appear in the existing ROP and which meet the criteria of Rules 281(2)(h), 285(2)(r)(iv), 287(2)(c), or 290.
 If Yes, identify the emission units in the table below. If No, go to Part H. Yes No
Note: If several emission units were installed under the same rule above, provide a description of each and an installation/modification/reconstruction date for each.

Origin of Applicable Requirements	Emission Unit Description – Provide Emission Unit ID and a description of Process Equipment, Control Devices and Monitoring Devices	Date Emission Unit was Installed/ Modified/ Reconstructed
<input type="checkbox"/> Rule 281(2)(h) or 285(2)(r)(iv) cleaning operation		
<input type="checkbox"/> Rule 287(2)(c) surface coating line		
<input type="checkbox"/> Rule 290 process with limited emissions		

Comments:

Check here if an AI-001 Form is attached to provide more information for Part G. Enter AI-001 Form ID:

PART H: REQUIREMENTS FOR ADDITION OR CHANGE

Complete this part of the application form for all proposed additions, changes or deletions to the existing ROP. This includes state or federal regulations that the source is subject to and that must be incorporated into the ROP or other proposed changes to the existing ROP. **Do not include additions or changes that have already been identified in Parts F or G of this application form.** If additional space is needed copy and complete an additional Part H.

Complete a separate Part H for each emission unit with proposed additions and/or changes.

H1. Are there changes that need to be incorporated into the ROP that have not been identified in Parts F and G? If <u>Yes</u> , answer the questions below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H2. Are there any proposed administrative changes to any of the existing emission unit names, descriptions or control devices in the ROP? If <u>Yes</u> , describe the changes in questions H8 – H16 below and in the affected Emission Unit Table(s) in the mark-up of the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H3. Does the source propose to add a new emission unit or flexible group to the ROP not previously identified in Parts F or G? If <u>Yes</u> , identify and describe the emission unit name, process description, control device(s), monitoring device(s) and applicable requirements in questions H8 – H16 below and in a new Emission Unit Table in the mark-up of the ROP. See instructions on how to incorporate a new emission unit/flexible group into the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H4. Does the source propose to add new state or federal regulations to the existing ROP? If <u>Yes</u> , on an AI-001 Form, identify each emission unit/flexible group that the new regulation applies to and identify <u>each</u> state or federal regulation that should be added. Also, describe the new requirements in questions H8 – H16 below and add the specific requirements to existing emission units/flexible groups in the mark-up of the ROP, create a new Emission Unit/Flexible Group Table, or add an AQD template table for the specific state or federal requirement. EGLE has provided AQD template tables for both the revised Landfill NESHAP (40 CFR 63 Subpart AAAA) and the Federal Plan (40 CFR 62 Subpart OOO). These templates have been marked up to include only those provisions that continue to be applicable to Smiths Creek Landfill after September 27, 2021.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
H5. Has a Consent Order/Consent Judgment (CO/CJ) been issued where the requirements were not incorporated into the existing ROP? If <u>Yes</u> , list the CO/CJ number(s) below and add or change the conditions and underlying applicable requirements in the appropriate Emission Unit/Flexible Group Tables in the mark-up of the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H6. Does the source propose to add, change and/or delete source-wide requirements? If <u>Yes</u> , identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. The existing AQD template table for 40 CFR 60 Subpart WWW that is in the current ROP should be removed since the landfill is now subject to the provisions of the Federal Plan (40 CFR 62 Subpart OOO). Portions of the Federal Plan regulations (monitoring, operational standards and compliance provisions) transitioned to the Landfill NESHAP on September 27, 2021.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
H7. Are you proposing to streamline any requirements? If <u>Yes</u> , identify the streamlined and subsumed requirements and the EU ID, and provide a justification for streamlining the applicable requirement below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

<p>H8. Does the source propose to add, change and/or delete emission limit requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H9. Does the source propose to add, change and/or delete material limit requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H10. Does the source propose to add, change and/or delete process/operational restriction requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H11. Does the source propose to add, change and/or delete design/equipment parameter requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H12. Does the source propose to add, change and/or delete testing/sampling requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p> <p>The 7th solar vent flare will need to have an initial performance test conducted within 180 days of startup. Testing will be conducted under the provisions of the Federal Plan and Landfill NESHAP (open flare requirements modified for a passive solar vent flare).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>H13. Does the source propose to add, change and/or delete monitoring/recordkeeping requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p> <p>Monitoring and some recordkeeping provisions will be conducted under the revised Landfill NESHAP and Federal Plan instead of under the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>H14. Does the source propose to add, change and/or delete reporting requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p> <p>Reporting provisions will be conducted under the revised Landfill NESHAP and Federal Plan instead of under the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

H15. Does the source propose to add, change and/or delete **stack/vent restrictions**? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H16. Does the source propose to add, change and/or delete any **other** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H17. Does the source propose to add terms and conditions for an alternative operating scenario or intra-facility trading of emissions? If Yes, identify the proposed conditions in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No



Check here if an AI-001 Form is attached to provide more information for Part H. Enter AI-001 Form ID:



RENEWABLE OPERATING PERMIT APPLICATION

AI-001: ADDITIONAL INFORMATION

This information is required by Article II, Chapter 1, part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.

SRN: N6207

Section Number (if applicable): 1

1. Additional Information ID

AI- AI-Part-C1, C2, C4, C5, C10, F5, H4**Additional Information**

2. Is This Information Confidential?

 Yes No

3. Narrative

Question C1, C4, C5 & F5: A 7th solar flare was installed at the site in September, 2022 and was therefore not included in the most recent MAERS report for Calendar Year 2021. PTE calculations (criteria pollutants and HAPs) for this 7th flare are provided in this renewal application. The permit will be marked up (as appropriate) to include this new passive control device in accordance with Question F5 of this form.

Question C2: The site accepts old refrigerators from residential customers. Once 10 – 15 have been accumulated, a third party licensed freon removal contractor comes to the site to remove the freon in the refrigerators. Since this activity takes place on the landfill property, 40 CFR 82 rules are applicable.

Question C10: The 100,000 gallon leachate storage tank (above ground) is not subject to the provisions of 40 CFR 60 Subpart Kb - Volatile Organic Liquid Storage Vessels, even though landfill leachate does contain small quantities of compounds that are volatile and/or hazardous air pollutants.

Subpart Kb has three applicability thresholds. Tanks with a capacity of less than 19,815 gallons (75 m³) are not subject to the NSPS. Tanks larger than 19,815 gallons but less than 39,894 gallons (151 m³) are not affected if the VOC vapor pressure is less than 15.0 kPa (112.5 mmHg). Tanks larger than 39,894 gallons are affected if the VOC vapor pressure is greater than 3.5 kPa (26.26 mm Hg).

The existing leachate storage tank at Smiths Creek Landfill is 100,000 gallons. The leachate VOC vapor pressure was calculated and demonstrates that NSPS Subpart Kb does not apply since vapor pressure is below the 3.5 kPa limit based on tank size. The vapor pressure of leachate that is stored in the tank is below 3.5 kPa, based on concentrations of VOCs that are present in the leachate (using site-specific leachate analytical data).

Question H4: The landfill is became subject to a new applicable federal regulation - 40 CFR 62 Subpart OOO (Federal Plan), promulgated May 31, 2021, since the landfill did not receive an expansion in volume after July 14, 2017. The landfill is considered a "Legacy Controlled Landfill" under the Federal Plan. Additionally, the Landfill NESHAP (40 CFR 63 Subpart AAAA) was revised on March 26, 2020. This regulation became effective on September 27, 2021 and replaces all monitoring, operational and compliance standards of the Federal Plan, and some recordkeeping and reporting requirements.

EGLE has provided AQD template tables for both the revised Landfill NESHAP and the Federal Plan. These templates have been marked up to include only those provisions that continue to be applicable to Smiths Creek Landfill after September 27, 2021 AND to include the site's seven solar flares. The existing template table for 40 CFR 60 Subpart WWW that is in the current ROP should be removed.

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION**

EFFECTIVE DATE: June 7, 2018

ISSUED TO

Smiths Creek Landfill and Blue Water Renewables, LLC

State Registration Number (SRN): N6207

LOCATED AT

6779 Smiths Creek Road, Smiths Creek (Kimball), Michigan 48074-3508

Style Definition: TOC 1

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-N6207-2018

Expiration Date: June 7, 2023

Administratively Complete ROP Renewal Application
Due Between December 7, 2021 and December 7, 2022

This Renewable Operating Permit (ROP) is issued in accordance with and subject to Section 5506(3) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Pursuant to Michigan Air Pollution Control Rule 210(1), this ROP constitutes the permittee's authority to operate the stationary source identified above in accordance with the general conditions, special conditions and attachments contained herein. Operation of the stationary source and all emission units listed in the permit are subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

SOURCE-WIDE PERMIT TO INSTALL

Permit Number: MI-PTI-N6207-2018

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(5) of Act 451. Pursuant to Michigan Air Pollution Control Rule 214a, the terms and conditions herein, identified by the underlying applicable requirement citation of Rule 201(1)(a), constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. Operation of all emission units identified in the PTI is subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

Michigan Department of Environmental Quality

Joyce Zhu, Southeast Michigan District Supervisor

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ROP No: MI-ROP-N6207-2018
Expiration Date: June 7, 2023
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AUTHORITY AND ENFORCEABILITY

For the purpose of this permit, the **permittee** is defined as any person who owns or operates an emission unit at a stationary source for which this permit has been issued. The **department** is defined in Rule 104(d) as the Director of the Michigan Department of Environmental Quality (MDEQ) or his or her designee.

The permittee shall comply with all specific details in the permit terms and conditions and the cited underlying applicable requirements. All terms and conditions in this ROP are both federally enforceable and state enforceable unless otherwise footnoted. Certain terms and conditions are applicable to most stationary sources for which an ROP has been issued. These general conditions are included in Part A of this ROP. Other terms and conditions may apply to a specific emission unit, several emission units which are represented as a flexible group, or the entire stationary source which is represented as a Source-Wide group. Special conditions are identified in Parts B, C, D and/or the appendices.

In accordance with Rule 213(2)(a), all underlying applicable requirements are identified for each ROP term or condition. All terms and conditions that are included in a PTI are streamlined, subsumed and/or is state-only enforceable will be noted as such.

In accordance with Section 5507 of Act 451, the permittee has included in the ROP application a compliance certification, a schedule of compliance, and a compliance plan. For applicable requirements with which the source is in compliance, the source will continue to comply with these requirements. For applicable requirements with which the source is not in compliance, the source will comply with the detailed schedule of compliance requirements that are incorporated as an appendix in this ROP. Furthermore, for any applicable requirements effective after the date of issuance of this ROP, the stationary source will meet the requirements on a timely basis, unless the underlying applicable requirement requires a more detailed schedule of compliance.

Issuance of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

Section 1 – Smiths Creek Landfill

ROP No: MI-ROP-N6207-2018
Expiration Date: June 7, 2023
PTI No: MI-PTI-N6207-2018

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SECTION 1 – Smiths Creek Landfill

A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**
- Those conditions that are hereby incorporated in a state-only enforceable Source-Wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R 336.1214a(5))**
- Those conditions that are hereby incorporated in a federally enforceable Source-Wide PTI pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

1. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as "state-only" are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**
2. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**
3. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee's own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**
4. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities: **(R 336.1213(1)(d))**
 - a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
 - c. Inspect, at reasonable times, any of the following:
 - i. Any stationary source.
 - ii. Any emission unit.
 - iii. Any equipment, including monitoring and air pollution control equipment.
 - iv. Any work practices or operations regulated or required under the ROP.
 - d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.
5. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq., and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

Section 1 – Smiths Creek Landfill

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6. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**
7. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**
8. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

9. Any 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).² **(R 336.1370)**
10. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

11. Unless otherwise specified in this ROP, the permittee shall comply with Rule 301, which states, in part, "Except as provided in subrules 2, 3, and 4 of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:"² **(R 336.1301(1))**
 - a. A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
 - b. A limit specified by an applicable federal new source performance standard.

The grading of visible emissions shall be determined in accordance with Rule 303.
12. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
 - a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.¹ **(R 336.1901(a))**
 - b. Unreasonable interference with the comfortable enjoyment of life and property.¹ **(R 336.1901(b))**

Testing/Sampling

13. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1).² **(R 336.2001)**
14. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**
15. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(5))**

Section 1 – Smiths Creek Landfill

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Monitoring/Recordkeeping

16. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate. **(R 336.1213(3)(b))**
- The date, location, time, and method of sampling or measurements.
 - The dates the analyses of the samples were performed.
 - The company or entity that performed the analyses of the samples.
 - The analytical techniques or methods used.
 - The results of the analyses.
 - The related process operating conditions or parameters that existed at the time of sampling or measurement.
17. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

18. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a Responsible Official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**
19. A Responsible Official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507. **(R 336.1213(4)(c))**
20. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**
21. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP. **(R 336.1213(3)(c))**
- For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
 - For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
 - For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

Section 1 – Smiths Creek Landfill

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22. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following: **(R 336.1213(3)(c))**
- Submitting a certification by a Responsible Official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
 - Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a Responsible Official which states that; “based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete.” The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.
23. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**
24. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**
25. 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 appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a Responsible Official in a manner consistent with the CAA.² **(R 336.1912)**

Permit Shield

26. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance, if either of the following provisions is satisfied. **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
- The applicable requirements are included and are specifically identified in the ROP.
 - The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.
- Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.
27. Nothing in this ROP shall alter or affect any of the following:
- The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
 - The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
 - The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**

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- d. The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**
28. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
- Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
 - Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**
 - Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
 - Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
 - State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**
29. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

30. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**
31. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**
32. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(10))**
33. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

34. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
- If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
 - If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
 - If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
 - If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

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Renewals

35. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(9))**

Stratospheric Ozone Protection

36. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F.
37. If the permittee is subject to 40 CFR Part 82, and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

38. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).
39. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall comply with the requirements of 40 CFR Part 68, no later than the latest of the following dates as provided in 40 CFR 68.10(a):
- June 21, 1999,
 - Three years after the date on which a regulated substance is first listed under 40 CFR 68.130, or
 - The date on which a regulated substance is first present above a threshold quantity in a process.
40. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68.
41. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c). **(40 CFR Part 68)**

Emission Trading

42. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan's State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

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Permit to Install (PTI)

43. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule.² **(R 336.1201(1))**
44. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA.² **(R 336.1201(8), Section 5510 of Act 451)**
45. The terms and conditions of a PTI 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 the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI 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. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ.² **(R 336.1219)**
46. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months of the original PTI issuance date, or has been interrupted for 18 months, the applicable terms and conditions from that PTI, as incorporated into the ROP, shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P. O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI.² **(R 336.1201(4))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

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SOURCE-WIDE CONDITIONS

POLLUTION CONTROL EQUIPMENT

EU-OPENFLARE-SCL1, EU-VENTFLARE-SCL1

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	225 ² tpy	12-month rolling time period as determined at the end of each calendar month.	FG-FACILITY-BWR2	SC VI.1 Appendix 7-1	R 336.1205(3) 40 CFR 52.21(d)

² The 225 tons of carbon monoxide (CO) emissions limit includes the emissions from Section 1 (landfill) and Section 2 (SI RICE Engines). The emissions are predominantly from the engines.

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period CO emission calculation records for source wide, as required by Special Condition I.1 and Appendix 7-2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² (R 336.1205(3), 40 CFR 52.21(d))
2. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period landfill gas usage records for FG-FACILITY-BWR2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² (R 336.1205(3), 40 CFR 52.21(c) and (d))

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))

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2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the [Federal Plan New Source Performance Standards](#) as specified in 40 CFR Part [6260](#), Subpart [OOOA and Subpart WWW](#).² **(40 CFR Part 6260 Subpart OOOA and WWW)**
2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart AAAA.² **(40 CFR Part 63 Subparts A and AAAA)**
3. Each Responsible Official shall certify annually the compliance status of the stationary source with all stationary Source-Wide conditions. This certification shall be included as part of the annual certification of compliance as required in the General Conditions in Part A and Rule 213(4)(c). **(R 336.1213(4)(c))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EU-LANDFILL-SCL1	This emission unit represents the Municipal Solid Waste (MSW) Landfill.	12/31/1989	NA
EU- ACTIVECOLLALGCS-SCL1	This emission unit represents the active landfill gas collection system at the landfill. Gas moving equipment draws landfill gas from the wells and delivers it to an open flare. An open flare which combusts landfill gas at active landfill when not burned in SI RICE engines for electric power generation.	10/31/2002	FG- ACTIVECOLL-AAAA & FG-ACTIVECOLL-OOQLGCS-SCL1
EU-OPENFLARE-SCL1	The flare is a combustor without enclosure or shroud.	10/31/2002	FG- OPENFLARE-AAAA & FG-OPENFLARE-OOQCONTROLS-SCL1
EU-VENTFLARE-SCL1	Consists of seven six self-igniting (solar powered) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of six the solar flares was performed on March 18, 2003. Testing of the seventh flare will be initiated within 180 days of September 21, 2022 and is; and, therefore, included is not required by in this table.	10/31/2002 & 9/21/2022	FG- VENTFLARE-AAAA & FG-VENTFLARE-OOQCONTROLS-SCL1
EU-BIOREACTOR-SCL1	Represents the portion of the landfill that is expected to be operated as a bioreactor.	08/03/2006	NA
EU-ASBESTOS-SCL1	Any active or inactive asbestos disposal site.	NA	NA
EU-GENERAC-28HP-NG (Generac)	NSPS 4J Emergency Generator. Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.	03/22/2015	FG-EMERGENS-SCL1

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Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-KOHLER-18HP-NG (Kohler)	NSPS 4J Emergency Generator. Installed June 2016. Manufacture date is February 25, 2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.	06/2013	FG-EMERGENS-SCL1
EU-PASSIVECOLLPLGCS-SCL1	This emission unit represents the passive landfill gas collection system at the landfill. This passive system consists of a series of perforated pipes buried in the waste, which delivers landfill gas to one of the six self-igniting (solar power) vent flares where it is combusted. <u>A seventh passive flare is installed at a leachate collection sump.</u>	10/31/2002 & <u>9/21/2022</u>	<u>FG-PASSIVECOLL-AAAA & FGPASSIVECOLL-OOOFG-LGCS-SCL1</u>

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EU-LANDFILL EU-LANDFILL-SCL1
EMISSION UNIT CONDITIONS

EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replace this section with two sections (one for each regulation).

DESCRIPTION

EU-LANDFILL-SCL1: This emission unit represents the Municipal Solid Waste (MSW) Landfill.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Most of the landfill gas is collected and combusted in an open flare or combusted in the internal combustion engines to generate electricity.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Methane (CH ₄) concentration	500 ppm above background level	Calendar quarter, except as specified in 40 CFR 60.756(f) (See V.5)	Surface of Landfill	SC-V.1 SC-V.2	40 CFR 60.753(d) 40 CFR 60.755(e) 40 CFR 63.1955(a)(1)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall comply with the requirements in 40 CFR 63.1955(b) and 40 CFR 63.1960 through 40 CFR 63.1980. **(40 CFR 63.1945(b))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall have installed a collection and control system that captures the landfill gas generated within the landfill as required by 40 CFR 60.752(b)(2)(i)(C), 40 CFR 60.752(b)(2)(ii), and 40 CFR 60.752(b)(2)(iii). **(40 CFR 60.752(b)(2)(i)(C), 40 CFR 60.752(b)(2)(ii), 40 CFR 60.752(b)(2)(iii), 40 CFR 63.1955(a)(1))**

2. The permittee shall route all the collected landfill gas to at least one of the following:
a. A flare designed in accordance with 40 CFR 60.18. **(40 CFR 60.752(b)(2)(ii)(A), 40 CFR 63.1955(a)(1))**
b. A control system designed and operated to reduce NMOC by 98 weight percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at three percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance

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~~test, required under 40 CFR 60.8 using the test methods specified in 40 CFR 60.754(d). (40 CFR 60.752(b)(2)(iii)(B), 40 CFR 63.1955(a)(1))~~

- ~~e. A treatment system that processes the collected gas for subsequent sale or use. The treatment system shall be designed so that all emissions from any atmospheric vent(s) shall be subject to 40 CFR 60.752(b)(2)(iii)(B) or (C). (40 CFR 60.752(b)(2)(iii)(C), 40 CFR 63.1955(a)(1))~~

V. TESTING/SAMPLING

~~Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))~~

- ~~1. To determine if the 500 ppm above background methane concentration limit at the surface of the landfill is exceeded, the permittee shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The permittee may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing. (40 CFR 60.753(d), 40 CFR 63.1955(a)(1))~~
- ~~2. The permittee shall use the following procedures for compliance with the surface methane operational standard as provided in 40 CFR 60.753(d):~~
 - ~~a. The permittee shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals (or a site-specific established spacing approved by the AQD) for each collection area on a quarterly basis (except as provided below in Special Condition V.5) using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 40 CFR 60.755(d). (40 CFR 60.755(c)(1), 40 CFR 63.1955(a)(1))~~
 - ~~b. The background concentration shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells. (40 CFR 60.755(c)(2), 40 CFR 63.1955(a)(1))~~
 - ~~c. Surface emission monitoring shall be performed in accordance with Section 4.3.1 of Method 21 of Appendix A of 40 CFR Part 60, except that the probe inlet shall be placed within five to ten centimeters of the ground. Monitoring shall be performed during typical meteorological conditions. (40 CFR 60.755(c)(3), 40 CFR 63.1955(a)(1))~~
 - ~~d. Any reading of 500 parts per million or more above background at any location shall be recorded as a monitored exceedance and the actions specified below shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of 40 CFR 60.753(d). (40 CFR 60.755(c)(4), 40 CFR 63.1955(a)(1))~~
 - ~~i. The location of each monitored exceedance shall be marked and the location recorded. (40 CFR 60.755(c)(4)(i), 40 CFR 63.1955(a)(1))~~
 - ~~ii. Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made and the location shall be re-monitored within 10 calendar days of detecting the exceedance. (40 CFR 60.755(c)(4)(ii), 40 CFR 63.1955(a)(1))~~
 - ~~iii. If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified below (in condition V.2.d.v) shall be taken, and no further monitoring of that location is required until the action specified below (in condition V.2.d.v) has been taken. (40 CFR 60.755(c)(4)(iii), 40 CFR 63.1955(a)(1))~~
 - ~~iv. Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified above (in conditions V.2.d.ii or iii) shall be re-monitored one month from the initial exceedance. If the one-month re-monitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the one-month re-monitoring shows an exceedance, the actions specified above (in condition V.2.d.iii) or below (in condition V.2.d.v) shall be taken. (40 CFR 60.755(c)(4)(iv), 40 CFR 63.1955(a)(1))~~
 - ~~v. For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other collection device shall be installed~~

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~~within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the AQD for approval. (40 CFR 60.755(c)(4)(v), 40 CFR 63.1955(a)(1))~~

3. ~~The permittee shall comply with the provisions in 40 CFR 60.755(c) with the following instrumentation specifications and procedures for surface emission monitoring devices: (40 CFR 60.755(d), 40 CFR 63.1955(a)(1))~~
 - a. ~~The portable analyzer shall meet the instrument specifications provided in Section 3 of Method 21 of Appendix A of 40 CFR Part 60, except that "methane" shall replace all references to VOC. (40 CFR 60.755(d)(1), 40 CFR 63.1955(a)(1))~~
 - b. ~~The calibration gas shall be methane, diluted to a nominal concentration of 500 ppm in air. (40 CFR 60.755(d)(2), 40 CFR 63.1955(a)(1))~~
 - c. ~~To meet the performance evaluation requirements in Section 3.1.3 of Method 21 of Appendix A of 40 CFR Part 60, the instrument evaluation procedures of Section 4.4 of Method 21 of Appendix A of 40 CFR Part 60 shall be used. (40 CFR 60.755(d)(3), 40 CFR 63.1955(a)(1))~~
 - d. ~~The calibration procedures provided in Section 4.2 of Method 21 of Appendix A of 40 CFR Part 60 shall be followed immediately before commencing a surface monitoring survey. (40 CFR 60.755(d)(4), 40 CFR 63.1955(a)(1))~~
4. ~~The permittee shall keep the following written records pertaining to surface methane monitoring: (R 336.1213(3))~~
 - a. ~~The route traversed including any areas not monitored because of unsafe conditions (i.e., truck traffic, construction, active face, dangerous areas, etc.) and areas included where visual observations indicate elevated levels of landfill gas. (R 336.1213(3))~~
 - b. ~~The location(s) and concentrations of any reading above 500 ppm above background. (40 CFR 60.755(c)(4)(i), R 336.1213(3))~~
 - c. ~~The meteorological conditions the day of the testing including wind speed, wind direction, temperature, and cloud cover. (R 336.1213(3))~~
5. ~~The permittee shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in 40 CFR 60.755(d). Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the monitoring frequency for that landfill to quarterly. (40 CFR 60.756(f), 40 CFR 63.1955(a)(1))~~

VI. MONITORING/RECORDKEEPING

~~Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))~~

1. ~~The permittee shall implement a program to monitor on a monthly basis for cover integrity and implement cover repairs as necessary. (40 CFR 60.755(c)(5), 40 CFR 63.1955(a)(1))~~
2. ~~Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall maintain up-to-date, readily accessible, on-site records of the design capacity report which triggered 40 CFR 60.752(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within four hours. Either paper copy or electronic formats are acceptable. (40 CFR 60.758(a), 40 CFR 63.1955(a)(1))~~
3. ~~Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, as provided in the definition of "design capacity," shall keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within four hours. Either paper copy or electronic formats are acceptable. (40 CFR 60.758(f), 40 CFR 63.1955(a)(1))~~

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4. ~~The permittee shall calculate and record the NMOC emission rate for purposes of determining when the system can be removed as provided in 40 CFR 60.752(b)(2)(v), using the equation presented in 40 CFR 60.754(b). (40 CFR 60.754(b))~~
5. ~~If the permittee adds any liquids other than leachate in a controlled fashion to the waste mass and does not comply with the bioreactor requirements in 40 CFR 63.1947, 40 CFR 63.1955(c), and 40 CFR 63.1980(c) through (f), the permittee shall keep a record of calculations showing that the percent moisture by weight expected in waste mass to which liquid is added is less than 40 percent. The calculation must consider the waste mass, moisture content of the incoming waste, mass of the water added to the waste including leachate recirculation and other liquids addition, and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balances calculations can be used. The permittee shall document the calculations and the basis of the assumptions. (40 CFR 63.1980(g))~~

VII. REPORTING

1. ~~Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(iii))~~
2. ~~Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))~~
3. ~~Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be received by appropriate AQD district office by March 15 for the previous calendar year. (R 336.1213(4)(c))~~
4. ~~The permittee shall submit an equipment removal report to the appropriate AQD District Supervisor 30 days prior to removal or cessation of operation of the control equipment. (40 CFR 60.757(e), 40 CFR 63.1955(a)(1))~~
 - a. ~~The equipment removal report shall contain all of the following items:~~
 - i. ~~A copy of the closure report submitted in accordance with 40 CFR 60.757(d). (40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a)(1))~~
 - ii. ~~Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. (40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a)(1))~~
 - iii. ~~A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired. (40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a)(1))~~
 - b. ~~The AQD may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. (40 CFR 60.757(e)(2), 40 CFR 63.1955(a)(1))~~
5. ~~The permittee shall submit reports which shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. The report shall include the location of each exceedance of the 500 parts per million methane concentration as provided above (Special Condition V.1) and the concentration recorded at each location for which an exceedance was recorded in the previous month. The report shall also include information on all deviations that occurred during the six-month reporting period. (40 CFR 60.757(f)(5), 40 CFR 63.1955(a)(1), 40 CFR 63.1955(c), 40 CFR 63.1980(a))~~
6. ~~The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD district office and it shall be delivered or postmarked by March 15 for the reporting period of July 1 through December 31 of the previous year and by September 15 for the reporting period of January 1 through June 30 of the same year. (40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))~~

See Appendix 8-4

VIII. STACK/VENT RESTRICTION(S)

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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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The collection and control system may be capped or removed provided that all the following conditions are met:
 - a. The landfill shall be a closed landfill as defined in 40 CFR 60.751. A closure report shall be submitted to the appropriate AQD District Office as provided in 40 CFR 60.757(d). ~~(40 CFR 60.752(b)(2)(v)(A), 40 CFR 63.1955(a)(1))~~
 - b. The collection and control system shall have been in operation a minimum of 15 years. ~~(40 CFR 60.752(b)(2)(v)(B), 40 CFR 63.1955(a)(1))~~
 - c. Following the procedures specified in 40 CFR 60.754(b), the calculated NMOC gas produced by the landfill shall be less than 50 megagrams per year on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart. ~~(40 CFR 60.752(b)(2)(v)(C), 40 CFR 63.1955(a)(1))~~
2. The permittee shall submit a closure report to the appropriate AQD District Office within 30 days of waste acceptance cessation. The AQD may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the AQD, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). ~~(40 CFR 60.757(d), 40 CFR 63.1955(a)(1))~~
3. If monitoring demonstrates that the operational requirements above in Special Condition V.1 are not met, corrective action shall be taken as specified above in Special Condition V.2. If corrective actions are taken as specified above in Special Condition V.2, the monitored exceedance is not a violation of the operational requirements in this section. ~~(40 CFR 60.753(g), 40 CFR 63.1955(a)(1))~~
4. For the approval of collection and control systems that includes any alternatives to the operational standards, test methods, procedures, compliance measures, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions, the permittee shall follow the procedures in 40 CFR 60.752(b)(2). ~~(40 CFR 63.1955(c))~~
5. The permittee shall comply with the requirements of 40 CFR Part 60, Subpart WWW. ~~(40 CFR 63.1955(a)(1))~~
6. The permittee shall comply with the requirements of 40 CFR Part 63, Subpart AAAA, including the general provisions specified in Table 1 and the SSM requirements in 40 CFR 63.6. ~~(40 CFR 63.1955, 40 CFR 63.6)~~
7. The permittee is no longer required to comply with the requirements of Subpart AAAA of Part 63 when it is no longer required to apply controls as specified in 40 CFR 60.752(b)(2)(v) of Subpart WWW. ~~(40 CFR 63.1950)~~

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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EU-ACTIVECOLL EU-ALGCS-SCL1
EMISSION UNIT CONDITIONS

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EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replace this section with two sections (one for each regulation).

DESCRIPTION

EU-ALGCS-SCL1: This emission unit represents the active landfill gas collection system at the landfill. Gas moving equipment draws landfill gas from the wells and delivers it to an open flare.

Flexible Group ID: FG-LGCS-SCL1

POLLUTION CONTROL EQUIPMENT

An open flare which combusts landfill gas at active landfill when not burned in SI-RICE engines for electric power generation.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- In the 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 60.753(e), 40 CFR 63.1955(a))**
- The permittee shall operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:
 - Five years or more if active; or **(40 CFR 60.753(a)(1), 40 CFR 63.1955(a))**
 - Two years or more if closed or at final grade **(40 CFR 60.753(a)(2), 40 CFR 63.1955(a))**
- The permittee shall operate the collection system with negative pressure at each wellhead except under the following conditions: **(40 CFR 60.753(b), 40 CFR 63.1955(a))**
 - A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided below (Special Condition VII.4). **(40 CFR 60.753(b)(1), 40 CFR 63.1955(a))**
 - Use of a geo-membrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan. **(40 CFR 60.753(b)(2), 40 CFR 63.1955(a))**
 - A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes shall be approved by the AQD. **(40 CFR 60.753(b)(3), 40 CFR 63.1955(a))**

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4. The permittee shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55 °C and with a nitrogen level less than 20 percent or an oxygen level less than five percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. **(40 CFR 60.753(c), 40 CFR 63.1955(a))**
5. The permittee shall operate the installed collection system to comply with the provisions in 40 CFR 60.753, 40 CFR 60.755, and 40 CFR 60.756. **(40 CFR 60.752(b)(2)(iv), 40 CFR 63.1955(a))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. An active collection system shall:
 - a. Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment. **(40 CFR 60.752(b)(2)(ii)(A)(1), 40 CFR 63.1955(a))**
 - b. Be designed per the specifications in 40 CFR 60.752(b)(2)(i). Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of five years or more if active; or two years or more if closed at final grade. **(40 CFR 60.755(b), 40 CFR 60.752(b)(2)(ii)(A)(2), 40 CFR 63.1955(a))**
 - c. Collect gas at a sufficient extraction rate. **(40 CFR 60.752(b)(2)(ii)(A)(3), 40 CFR 63.1955(a))**
 - d. Be designed to minimize off-site migration of subsurface gas. **(40 CFR 60.752(b)(2)(ii)(A)(4), 40 CFR 63.1955(a))**
2. The permittee shall design the collection system so that all collected gases are vented to a control system designed and operated in compliance with 40 CFR 60.752(b)(2)(iii). **(40 CFR 60.753(e), 40 CFR 63.1955(a))**
3. When adding gas collectors to the active gas collection system, a sufficient density of gas collectors shall be installed in compliance as specified above (Special Condition IV.1). The permittee shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the appropriate AQD District Office, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards in NSPS WWW. **(40 CFR 60.755(a)(2), 40 CFR 63.1955(a))**
 - a. If the permittee is seeking to demonstrate compliance through the use of a collection system not conforming to the specifications provided in 40 CFR 60.759, then the permittee shall provide information that satisfies the AQD District Supervisor as specified in 40 CFR 60.752(b)(2)(i)(C), demonstrating that off-site migration is being controlled. **(40 CFR 60.755(a)(6), 40 CFR 63.1955(a))**
4. The permittee shall install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead. **(40 CFR 60.756(a), 40 CFR 63.1955(a))**
5. The permittee shall site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the appropriate AQD District Supervisor as provided in 40 CFR 60.752(b)(2)(i)(C) and (D):
 - a. The collection devices within the interior and along the perimeter areas shall be certified, by a professional engineer, to achieve comprehensive control of surface gas emissions. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat. **(40 CFR 60.759(a)(1), 40 CFR 63.1955(a))**
 - b. The sufficient density of gas collection devices determined above in Special Condition IV.5.a shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior. **(40 CFR 60.759(a)(2), 40 CFR 63.1955(a))**
 - c. The placement of gas collection devices determined above in Special Condition IV.5.a shall control all gas producing areas, except as provided below in Special Conditions IV.5.c.i and ii. **(40 CFR 60.759(a)(3), 40 CFR 63.1955(a))**

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- i. ~~Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the District Supervisor upon request. (40 CFR 60.759(a)(3)(i), 40 CFR 63.1955(a))~~
 - ii. ~~Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the AQD District Supervisor upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the equation in Appendix 7-1. (40 CFR 60.759(a)(3)(ii), 40 CFR 63.1955(a)). See Appendix 7-1~~
6. ~~The permittee shall construct the gas collection devices using the following equipment or procedures:~~
- a. ~~The landfill gas extraction components shall be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system shall extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration. (40 CFR 60.759(b)(1), 40 CFR 63.1955(a))~~
 - b. ~~Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations. (40 CFR 60.759(b)(2), 40 CFR 63.1955(a))~~
 - c. ~~Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly shall include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness. (40 CFR 60.759(b)(3), 40 CFR 63.1955(a))~~
7. ~~The active gas collection system shall be designed convey the landfill gas to a control system in compliance with 40 CFR 60.752(b)(2)(iii) through the collection header pipe(s). The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures: (40 CFR 60.759(c), 40 CFR 63.1955(a))~~
- a. ~~For existing collection systems, the flow data shall be used to project the maximum flow rate. If no flow data exists, the procedures in 40 CFR 60.759(c)(2) shall be used. (40 CFR 60.759(c)(1), 40 CFR 63.1955(a))~~
 - b. ~~For new collection systems, the maximum flow rate shall be in accordance with 40 CFR 60.755(a)(1). (40 CFR 60.759(c)(2), 40 CFR 63.1955(a))~~

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. ~~For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(3), the permittee shall measure gauge pressure in the gas collection header at each individual well, monthly. If a positive pressure exists, action shall be initiated to correct the exceedance within five calendar days, except for the three conditions allowed under 40 CFR 60.753(b) (Special Conditions III.3.a-c). If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120~~

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- ~~days of the initial measurement of positive pressure. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the AQD for approval. (40 CFR 60.755(a)(3), 40 CFR 60.756(a)(1), 40 CFR 63.1955(a))~~
- ~~a. If monitoring demonstrates that the negative pressure is not being met, then corrective action shall be taken as noted in 40 CFR 60.755(a)(3) (Special Condition VI.1.). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements. (40 CFR 60.753(g), 40 CFR 63.1955(a))~~
- ~~2. The permittee is not required to expand the gas collection system as required in 40 CFR 60.755(a)(3) (Special Condition VI.1) during the first 180 days after gas collection system startup. (40 CFR 60.755(a)(4), 40 CFR 63.1955(a))~~
- ~~3. For the purpose of identifying whether excess air infiltration into the landfill is occurring, the permittee shall monitor each well monthly for temperature and oxygen as provided in 40 CFR 60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within five calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the AQD for approval. (40 CFR 60.755(a)(5), 40 CFR 60.756(a)(2), 40 CFR 60.756(a)(3), 40 CFR 63.1955(a))~~
- ~~a. If monitoring demonstrates that the temperature and oxygen levels are not being met, then corrective action shall be taken as noted above and specified in 40 CFR 60.755(a)(5). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements. (40 CFR 60.753(g), 40 CFR 63.1955(a))~~
- ~~b. Unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i), the oxygen shall be determined by an oxygen meter using Method 3A or 3C except that:~~
- ~~i. The span shall be set so that the regulatory limit is between 20 and 50 percent of the span; (40 CFR 60.753(c)(i), 40 CFR 63.1955(a))~~
- ~~ii. A data recorder is not required. (40 CFR 60.753(c)(ii), 40 CFR 63.1955(a))~~
- ~~iii. Only two calibration gases are required, a zero and span, and ambient air may be used as the span. (40 CFR 60.753(c)(iii), 40 CFR 63.1955(a))~~
- ~~iv. A calibration error check is not required. (40 CFR 60.753(c)(iv), 40 CFR 63.1955(a))~~
- ~~v. The allowable sample bias, zero drift, and calibration drift are ± 10 percent. (40 CFR 60.753(c)(v), 40 CFR 63.1955(a))~~
- ~~4. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in 40 CFR 60.758(b)(1) (Special Condition VI.4.a-b) as measured during the compliance determination. Records of the control device vendor specifications shall be maintained until removal.~~
- ~~a. The maximum expected gas generation flow rate as calculated in 40 CFR 60.755(a)(1). The permittee may use another method to determine the maximum gas generation flow rate, if the method has been approved by the appropriate AQD District Office. (40 CFR 60.758(b)(1)(i), 40 CFR 63.1955(a))~~
- ~~b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 60.759(a)(1). (40 CFR 60.758(b)(1)(ii), 40 CFR 63.1955(a))~~
- ~~5. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector; and the installation date and location of all newly installed collectors as specified under 40 CFR 60.755(b) (Special Condition IV.1.b). (40 CFR 60.758(d), 40 CFR 60.758(d)(1), 40 CFR 63.1955(a))~~
- ~~6. The permittee shall keep readily accessible records of all collection and control system exceedances of the operational standards in 40 CFR 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance. (40 CFR 60.758(e), 40 CFR 63.1955(a))~~

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7. The permittee shall maintain the following information:
- A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion. ~~(40 CFR 60.757(g)(1), 40 CFR 63.1955(a))~~
 - The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based. ~~(40 CFR 60.757(g)(2), 40 CFR 63.1955(a))~~
 - The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. ~~(40 CFR 60.757(g)(3), 40 CFR 63.1955(a))~~
 - The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. ~~(40 CFR 60.757(g)(4), 40 CFR 63.1955(a))~~
 - The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. ~~(40 CFR 60.757(g)(5), 40 CFR 63.1955(a))~~
 - The provisions for the control of off-site migration. ~~(40 CFR 60.757(g)(6), 40 CFR 63.1955(a))~~
 - The permittee shall maintain the dates of the landfill gas well installations, the age of the waste in which the landfill gas wells were installed, and the age of the in-place waste for each portion of the landfill. ~~(R 336.1213(3))~~

VII. REPORTING

- Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. ~~(R 336.1213(3)(c)(ii))~~
- Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. ~~(R 336.1213(3)(c)(i))~~
- Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be received by appropriate AQD district office by March 15 for the previous calendar year. ~~(R 336.1213(4)(c))~~
- The permittee shall submit to the appropriate AQD district office semi-annual reports for the gas collection system. Reports shall be received by the appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. For enclosed combustion devices and flares, reportable exceedances are defined under 40 CFR 60.758(c). The semi-annual reports for the gas collection system shall include the following information: ~~(40 CFR 60.757(f), 40 CFR 63.1980(a), 40 CFR 63.1955(a), 40 CFR 63.1965)~~
 - Value and length of time for exceedance of applicable parameters monitored above in Special Conditions VI.1 and VI.3. ~~(40 CFR 60.757(f)(1))~~
 - All periods when the collection system was not operating in excess of five days. ~~(40 CFR 60.757(f)(4))~~
 - The date of installation and the location of each well or collection system expansion added pursuant to Special Conditions IV.1.b, VI.1, and VI.3. ~~(40 CFR 60.757(f)(6))~~
 - Any deviations as listed in 40 CFR 63.1965. ~~(40 CFR 63.1965)~~
 - The permittee shall record instances when a positive pressure occurs in efforts to avoid fire. ~~(40 CFR 60.753(b)(1))~~
- The permittee shall submit a startup, shutdown, and malfunction (SSM) report to the appropriate district office. It shall be delivered or postmarked by March 15 for the reporting period of July 1 through December 31 of the previous calendar year and by September 15 for the reporting period of January 1 through June 30 of the same year.

See Appendix 8-1

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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 Dimensions (inches)	Minimum Height Above-Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. If monitoring demonstrates that the operational requirements above in Special Conditions III.3 through III.5 are not met, corrective action shall be taken as specified above in Special Conditions VI.1 and VI.3. If corrective actions are taken as specified above in Special Conditions VI.1 and VI.3, the monitored exceedance is not a violation of the operational requirements in Special Conditions III.3 through III.5. **(40 CFR 60.753(g), 40 CFR 63.1955(a))**
2. The above provisions in Special Conditions IV.1.b, VI.1 and VI.3 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 five days for collection systems. **(40 CFR 60.755(e), 40 CFR 63.1955(a))**
3. If the permittee is seeking to install a collection system that does not meet the specifications above in Special Conditions IV.5, IV.6, and IV.7, or is seeking to monitor alternative parameters to those required by 40 CFR 60.753 through 40 CFR 60.756, they shall provide information satisfactory to the appropriate AQD District Office as provided in 40 CFR 60.752(b)(2)(i)(B) and (C) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The AQD may specify additional appropriate monitoring procedures. **(40 CFR 60.756(e), 40 CFR 63.1955(a))**
4. The permittee shall have developed and implemented a written SSM plan according to the provision in 40 CFR 63.6(e)(3) for EU-ALGCS-SCL1. A copy of the SSM plan shall be maintained on site. **(40 CFR 63.1960)**
5. The active landfill gas collection system shall also comply with all applicable requirements listed under FG-LGCS-SCL1 in Table D of this renewable operating permit. **(R 336.1213(3))**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**EU-OPENFLARE-SCL1
EMISSION UNIT CONDITIONS**

EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replace this section with two sections (one for each regulation).

DESCRIPTION

EU-OPENFLARE-SCL1: The flare is a combustor without enclosure or shroud. The initial performance testing for the open flare has already been performed (March 18, 2003, Derenzo and Associates, Inc. [Project No. 0301056, April 04, 2003]) and therefore, the test is not required by this table.

Flexible Group ID: FG-CONTROLS-SCL1

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- The permittee shall operate the flare in accordance with 40 CFR 60.18 except as noted in 40 CFR 60.754(e). ~~(40 CFR 60.752(b)(2)(iii)(A), 40 CFR 63.1955(a))~~
- The permittee shall operate the flare at all times when the collected gas is routed to it. ~~(40 CFR 60.753(f), 40 CFR 63.1955(a))~~
- The flare shall be operated with no visible emissions, as determined by the methods specified in 40 CFR 60.18(f), except for periods not to exceed a total of five minutes during any two consecutive hours. ~~(40 CFR 60.18(c)(1))~~
- The flare shall be operated 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))~~
- The flare shall be used only with the net heating value of the gas being combusted of 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted of 7.45 MJ/scm (200 Btu/scf) or greater if the flare is non-assisted. The net heating value of the gas being combusted shall be determined by the methods specified in 40 CFR 60.18(f). ~~(40 CFR 60.18(c)(3))~~

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6. ~~Steam-assisted and 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. ~~Steam-assisted and 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. ~~Steam-assisted and 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))~~
7. ~~Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, V_{max} , as determined by the method specified in 40 CFR 60.18(f)(6). (40 CFR 60.18(c)(5))~~
8. ~~Flares used to comply with provisions of 40 CFR Part 60, Subpart A shall be operated at all times when emissions may be vented to them. (40 CFR 60.18(e))~~
9. ~~The permittee shall operate control system such that all collected gases are vented to a control system designed and operated in accordance with 40 CFR 60.752(b)(2)(iii). In the 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 shall contributing to venting of the gas to the atmosphere shall be closed within one hour. (40 CFR 60.753(e), 40 CFR 63.1955(a))~~

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. ~~The permittee shall install, calibrate, maintain, and operate, according to the manufacturer's specifications a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. (40 CFR 60.756(c)(1), 40 CFR 63.1955(a))~~
2. ~~A device that records flow to or bypass of the flare. The owner or operator shall either: (40 CFR 60.756(c)(2), 40 CFR 63.1955(a))~~
- a. ~~Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or~~
- b. ~~Secure the bypass line valve in the closed position with a car seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.~~

V. TESTING/SAMPLING

~~Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))~~

NA

VI. MONITORING/RECORDKEEPING

~~Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))~~

1. ~~The permittee shall install, calibrate, maintain, and operate according to the manufacturer's specifications, a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. (40 CFR 60.756(c)(1), 40 CFR 63.1955(a))~~
2. ~~Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep up-to-date, readily accessible records for the life of the open flare of the data listed in 40 CFR 60.758(b)(4) (Special Condition VI.3) as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of five years. Records of the open flare vendor specifications shall be maintained until removal. (40 CFR 60.758(b), 40 CFR 63.1955(a))~~
3. ~~The permittee shall maintain records regarding the flare type (i.e., steam-assisted, air-assisted, or non-assisted), all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit~~

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~~velocity determinations made during the performance test as specified in 40 CFR 60.18; continuous records of the open flare pilot flame or open flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent. (40 CFR 60.758(b)(4), 40 CFR 63.1955(a))~~

- ~~4. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 CFR 60.756 (Special Condition VI.1), as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. (40 CFR 60.758(c))~~
 - ~~a. The permittee shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device or the indication of bypass flow or records of monthly inspections of car seals or lock-and-key configurations used to seal bypass lines, specified under 40 CFR 60.756. (40 CFR 60.758(c)(2), 40 CFR 63.1955(a))~~
 - ~~b. The permittee shall keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under 40 CFR 60.756(c) (Special Condition VI.1.a), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent. (40 CFR 60.758(c)(4), 40 CFR 63.1955(a))~~
- ~~5. The following records for the flare shall be maintained onsite:~~
 - ~~a. Records indicating presence of flare pilot flame. (40 CFR 60.18(f)(2))~~
 - ~~b. The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in Appendix 7-1. (40 CFR 60.18(f)(3))~~
 - ~~c. The actual exit velocity of the flare shall be calculated and recorded by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Federal Reference Test Methods 2, 2A, 2C, or 2D as appropriate, by the unobstructed (free) cross-sectional area of the flare tip. (40 CFR 60.18(f)(4))~~
 - ~~d. The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in Appendix 7-1. (40 CFR 60.18(f)(5))~~
 - ~~e. The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in Appendix 7-1. (40 CFR 60.18(f)(6))~~

See Appendix 7-1

VII. REPORTING

- ~~1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))~~
- ~~2. Semi-annual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))~~
- ~~3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))~~
- ~~4. The permittee shall submit to the appropriate AQD District Office semiannual reports for the gas collection system. Reports shall be received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. For enclosed combustion devices and flares, reportable exceedances are defined under 40 CFR 60.758(c). The semiannual report shall contain:~~
 - ~~a. Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(b). (40 CFR 60.757(f)(1), 40 CFR 63.1980(a), 40 CFR 63.1955(a))~~
 - ~~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. (40 CFR 60.757(f)(2), 40 CFR 63.1980(a), 40 CFR 63.1955(a))~~
 - ~~c. Description and duration of all periods when the control device was not operating for a period exceeding one hour and length of time the control device was not operating. (40 CFR 60.757(f)(3), 40 CFR 63.1980(a), 40 CFR 63.1955(a))~~

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5. The permittee shall submit an equipment removal report to the AQD 30 days prior to removal or cessation of operation of the open flare.
- a. The equipment removal report shall contain all of the following items:
- i. A copy of the closure report submitted in accordance with 40 CFR 60.757. ~~(40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a))~~
 - ii. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired. ~~(40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a))~~
 - iii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. ~~(40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a))~~
- b. Additional information may be requested as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. ~~(40 CFR 60.757(e)(2), 40 CFR 63.1955(a))~~
6. The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD District Office and it shall be delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. ~~(40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))~~

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of 40 CFR 60 Subparts A and WWW, Standard of Performance for Municipal Solid Waste Landfills as they apply to EU-OPENFLARE-SCL1. ~~(40 CFR 60 Subparts A and WWW)~~
2. The permittee shall comply with all applicable provisions of 40 CFR 63 Subparts A and AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as they apply to EU-OPENFLARE-SCL1. ~~(40 CFR 60 Subparts A and AAAA)~~
3. The duration of start-up, shutdown, or malfunction for the open flare shall not exceed one hour. ~~(40 CFR 60.755(e), 40 CFR 63.1955(a))~~
4. Compliance of 40 CFR Part 63, Part 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 in 40 CFR 60.756(c)(1) (Special Condition VI.1) are used to demonstrate compliance with the operating conditions for the open flare. The permittee shall have developed and implemented a written SSM for EU-OPENFLARE-SCL1. A copy of the SSM plan shall be maintained on site. ~~(40 CFR 63.1960)~~

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**EU-VENTFLARE-SCL4
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-VENTFLARE-SCL4: Consists of ~~sevensix~~ self-igniting (solar powered: Solar power charges 6-V batteries that produce sparks) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of ~~six~~ of the solar flares was performed on March 18, 2003, and, therefore, is not required by this table. Due to lack of gas generation, most flares are idle most of the times. When gas flow is detected by PLC, a flare lights up by a spark. The seventh flare became operational on September 21, 2022 and will be tested within 180 days of startup.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- Flares shall be designed for and operated with no visible emissions as determined by the methods specified in 40 CFR 60.18(f) ~~and 40 CFR 63.11(b)???~~, except for periods not to exceed a total of five minutes during any two consecutive hours. ~~(40 CFR 60.18(c)(1), 40 CFR 63.11(b)(4)40-CFR-60.752(b)(2)(iii)(A))~~
- Passive flares shall be operated with a battery to provide a spark to re-ignite the flare as long as landfill gas of sufficient quality and quantity is present to sustain combustion. ~~(40 CFR 60.18(c)(2), 40 CFR 63.11(b)(5)40-CFR 60.752(b)(2)(i), 40 CFR 63.1955(e), U.S. EPA Approved Final Control Plan, page 2)~~
- Passive flares shall be used only if the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater. The net heating value of the gas being combusted shall be determined by the methods specified in 40 CFR 60.18(f) ~~and 40 CFR 63.11(b).~~ ~~(40 CFR 60.18(c)(3), 40 CFR 63.1955(a), 40 CFR 63.1959(e)0.752(b)(2)(i), 40 CFR 63.1955(e), U.S. EPA Approved Final Control Plan, page 2)~~
- Passive flares used to comply with provisions of 40 CFR Part 60 Subpart A shall have their ignition systems operated at all times when emissions may be vented to them. ~~(40 CFR 60.18(e), 40 CFR 63.11(b)(3)40-CFR 60.752(b)(2)(iii)(A))~~
- The permittee shall operate and maintain the passive flares in accordance with the manufacturer's recommendations, including, but not limited to, conducting periodic relight testing. ~~(R 336.1213(3), 40 CFR 63.6(e), EPA Approved Final Control Plan, manufacturer information enclosure)~~

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IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Flares shall be designed and operated in accordance with 40 CFR 60.18, [40 CFR 63.11](#) and according to the U.S. EPA approved Final Control Plan. (~~40 CFR 63.1955(a), 40 CFR 63.1959(b)(2)(iii)(A), 40 CFR 60.752(b)(2)(iii)(A), 40 CFR 60.752(b)(2)(i), 40 CFR 63.1959(e)5(e)~~, U.S. EPA Approved Final Control Plan)
2. The permittee shall install, calibrate, maintain, and operate the following equipment, associated with each passive flare, according to the manufacturer's specifications: (~~40 CFR 63.1961(c)0.756(e), 40 CFR 63.1955(a)~~, U.S. EPA Approved Final Control Plan, manufacturer information enclosure)
 - a. A battery and charging system, to provide spark to reignite the flare as long as landfill gas of sufficient quality and quantity is present to sustain combustion.
 - b. A thermocouple which indicates the presence of a flame.
3. The passive flares must be designed to meet the requirements of 40 CFR 60.18 with respect to exit velocities and visible emissions. The passive flare will be able to ignite and stay lit with a minimum of 30% methane. (~~40 CFR 60.752(b)(2)(i)~~, ~~40 CFR 63.1955(ae)~~, U.S. EPA Approved Final Control Plan, manufacturer information enclosure, page 5)
4. Flares used to comply with 40 CFR 60.18 shall be steam-assisted, air-assisted, or non-assisted. (~~40 CFR 60.18(c)(6), 40 CFR 63.11(b)(4), 40 CFR 60.752(b)(2)(iii)(A)~~)

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

1. Within 180 days after commencement of initial startup, the permittee must verify visible emissions from EUVENTFLARE, by testing at owner's expense, in accordance with Department requirements. Testing must be performed using approved USEPA Method 22 listed in 40 CFR 60, Appendix A. No less than 30 days prior to testing, the permittee must submit a complete test plan to the appropriate AQD District Office. The AQD must approve the final plan prior to testing. The permittee must submit a complete report of the test results to the appropriate AQD District Office within 60 days following the last date of the test. (R 336.1213(3), R 336.2001, R 336.2003, R 336.2004, 40 CFR 63.11(b)(4))

1. Within 180 days after commencement of initial startup, the permittee must verify the following:
 - a. The net heating value of the gas being combusted in the flare must be calculated and recorded using the equation provided in Appendix 7-1. (40 CFR 63.11(b)(6))
 - b. The exit velocity for steam-assisted, air-assisted, or non-assisted flares as determined by the methods provided in Appendix 7-1. (40 CFR 63.11(b)(7) and (8))

See Appendix 7-1

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Weekly inspections of spark plug performance of the non-assisted flares shall be completed and records shall be kept onsite. In the event of a spark plug failure, the permittee has five days to correct the malfunction. If the malfunction cannot be corrected within five days, a deviation will be reported during semiannual [NESHAPSSM](#) report.
2. The presence of a flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame. (~~40 CFR 60.18(f)(2), 40 CFR 63.11(b)(5)0.752(b)(2)(i), 40 CFR 63.1955(ae)~~, U.S. EPA Approved Final Control Plan, page 2)
3. The net heating value of the gas being combusted in a flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). (R 336.1213(3), 40 CFR 60.18(f)(3), 40 CFR ~~63.11(b)(6)0.752(b)(2)(iii)(A)~~)
OR

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The net heating value of gas being combusted in a flare will be determined using 40 CFR 60, Method 3C. (40 CFR ~~63.1959(e)0.752(b)(2)(i)~~, 40 CFR 63.1955(ae))

4. The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be determined and recorded using the equation provided in 40 CFR 60.18(f)(5). (R 336.1213(3), 40 CFR 60.18(f)(5), 40 CFR ~~63.11(b)(7)(iii)0.752(b)(2)(iii)(A)~~)
5. The permittee shall perform the following monitoring on a monthly basis: (40 CFR ~~63.1959(a)(2)(ii)(A)0.752(b)(2)(i)~~, 40 CFR 63.1955(ae))
 - a. Downloading of the data collected by the data logger.
 - b. Visual inspection of each flare to verify that components of the flare have not become damaged by weather conditions or vandalism.
6. The permittee shall monitor the flare to ensure that it is operated and maintained in conformance with its design and the provisions of 40 CFR Part 60 Subpart A, ~~40 CFR 62 Subpart OOO and 40 CFR 63 Subpart AAAA and 40 CFR Part 60 Subpart WWW.~~ (40 CFR 60.18(d), 40 CFR ~~63.1959(a)(2)(ii)(A)0.752(b)(2)(iii)(A)~~)

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The vent flares shall also comply with all applicable requirements listed under [FGVENTFLAREOOO & FGVENTFLAREAAAA.FG-CONTROLS-SCL4](#) in Table D of this renewable operating permit. R 336.1213(3))

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**EU-BIOREACTOR-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-BIOREACTOR-SCL1: Represents the portion of the landfill that is expected to be operated as a bioreactor.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The bioreactor gas collection and control system shall be installed prior to the initiation of liquids addition. **(40 CFR 63.1947(c)(1))**
2. The gas collection and control system shall begin operating within 180 days after initiation of liquids or within 180 days of achieving a moisture content of 40 percent by weight, whichever is later. **(40 CFR 63.1947(c)(2))**
3. If the permittee chooses to calculate moisture content to demonstrate compliance with 40 CFR 63.1947(c)(2), the procedures delineated in 40 CFR 63.1908(g) and 40 CFR 63.1908(h) shall be used to determine when the moisture content within a bioreactor reaches 40 percent by weight. **(40 CFR 63.1947(c)(2))**
4. If a bioreactor is located at a MSW landfill that is not permanently closed and has a design capacity equal to or greater than 2.5 million Mg or 2.5 million m³, then it shall meet the requirements of 40 CFR 63.1955(a) and the requirements listed below:
 - a. The permittee must comply with 40 CFR 63.1955 starting on the date they are required to install the gas collection and control system general provisions specified in Table 1 of 40 CFR Part 63 Subpart AAAAA and 40 CFR 63.1960 through 40 CFR 63.1985 on the date the installation of the gas collection and control system is required. **(40 CFR 63.1955(bd)(1))**
 - b. The permittee must extend ~~extension of~~ the collection and control system into each new cell or area of the bioreactor prior to initiating liquids addition ~~initiation of liquids~~ in that area ~~instead of the schedule in 40 CFR 60.752(b)(2)(ii)(A)(2)~~. **(40 CFR 63.1955(bd)(2))**
5. Beginning no later than September 28, 2021, the collection and control system design plan may include for approval collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping, or reporting provisions.

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[as provided in § 63.1981\(d\)\(2\). The operator shall comply with the requirements of 40 CFR Part 60, Subpart WWW. \(40 CFR 63.1955\(a\)\(1\)\)](#)

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

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V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The owner or operator shall keep records as specified in 40 CFR [63.1983](#) and the general provisions of 40 CFR [63 Subpart A](#) as shown in Table 1 of 40 CFR Part 63 Subpart AAAA, Part 60, Subpart WWW or in the Federal plan or EPA-approved state or tribal plan that implements 40 CFR Part 60, Subpart Cc, whichever applies. (40 CFR [63.1983\(a\)](#))
- ~~2. The owner or operator shall keep records and reports as specified in the general provisions of Table 1 of 40 CFR, Part 60, Subpart AAAA. (40 CFR [63.1980\(b\)](#))~~
3. If any liquids other than leachate are added in a controlled fashion to the waste mass and these liquids do not comply with the bioreactor requirements in 40 CFR 63.1947, 40 CFR 63.1955([be](#)), and 40 CFR 63.1982([ae](#)) and ([b](#)) through ([f](#)), then records of calculations shall be kept showing that the moisture by weight expected in the resulting waste mass is less than 40 percent. The calculation shall consider the waste mass, the moisture content of the incoming waste, the mass of water added to the waste including leachate recirculation and the addition of other liquids and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balance calculations may be used. The owner or operator shall document the calculations and provide the basis for any assumptions. A record of these calculations shall be kept until the cessation of liquid addition. (40 CFR [63.1982\(cg\)](#))
4. If an owner or operator calculates moisture content to establish the date on which the bioreactor is required to begin operating the collection and control system under 40 CFR 63.1947(a)(2) or (c)(2), a record of the calculations ~~including the information specified in 40 CFR 63.1947(g)~~ shall be maintained for five years. (40 CFR [63.1982\(eh\)](#)) **NOTE TO EGLE: The phrase crossed out above said "including the information specified in paragraph (e) of this section (40 CFR 63.1982) – however, this section does not contain a paragraph "e". This is an error in the federal NESHAP regulations.**
5. Monitoring shall be performed to comply with 40 CFR, Part [630](#), Subpart [AAAAWWW](#). (40 CFR [63 Subpart AAAA.1955\(a\)\(1\)](#))

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))
4. ~~Submit a semiannual report containing the information required in 40 CFR 63.1981(h). The annual report described in 40 CFR 60.757(f) shall be submitted~~ every six months. (40 CFR [63.1981\(ha\)](#))
5. For bioreactors at new affected sources, the initial semiannual compliance report and performance test results described in 40 CFR [63.1981\(h\)0.757\(f\)](#) shall be submitted within 180 days after the compliance date required

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to begin operating the gas collection and control system as specified by 40 CFR 63.1947(a)(2). **(40 CFR 63.19820(ae))**

6. If a semiannual compliance report is required to be submitted for a bioreactor and a conventional portion of the same landfill, the submittal of a subsequent semiannual compliance report for the bioreactor may be delayed in accordance with the following:
 - a. Until the date the initial or subsequent semiannual compliance report is due for the conventional portion of the landfill. **(40 CFR 63.19820(bf)(4))**
 - b. The delay of the submittal of the subsequent compliance report for the bioreactor shall be no more than 12 months after the due date for the submittal of the initial semiannual compliance report and performance test results described in 40 CFR 63.1981(h)0-757(f). The report shall cover the time period since the previous semiannual report for the bioreactor and cover a period of at least six months and no more than 12 months in duration. **(40 CFR 63.19820(bf)(2))**
 - c. After submittal of the delayed subsequent compliance report for the bioreactor, all subsequent semiannual reports shall be submitted every six months on the same due date as the semiannual report for the conventional portion of the landfill. **(40 CFR 63.19820(bf)(32))**
7. Within 90 days after the bioreactor achieves 40 percent moisture content by weight, the owner or operator shall report the results of the moisture content calculation, the date the bioreactor achieved 40 percent moisture content by weight, and the date which the collection and control system will be put into operation. Beginning no later than September 27, 2021, the reports should be submitted following the procedure specified in § 63.1981(l)(2). **(40 CFR 63.19820(dh))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The owner or operator of a landfill which includes a bioreactor is no longer required to comply with the requirements of this subpart provided either of the conditions below are met:
 - a. The landfill meets the control system removal criteria in 40 CFR 63.19500-752(b)(2)(v) of Part 60, Subpart ~~WWW~~ or the bioreactor meets the criteria for a nonproductive area of the landfill as specified in 40 CFR 63.1962(a)(3)(ii)60-759(a)(3)(ii) of Part 60, Subpart ~~WWW~~. **(40 CFR 63.1952(a))**
 - b. The bioreactor portion of the landfill is a closed landfill as defined in 40 CFR 63.19900-751, Subpart ~~WWW~~, liquid addition to the bioreactor has permanently ceased, and liquids have not been added to the bioreactor for at least one year. A closure report for the bioreactor shall be submitted to the appropriate AQD district office as stipulated in 40 CFR 63.1981(q)0-757(d) if all the above conditions are met. **(40 CFR 63.1952(b))**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

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²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**EU-ASBESTOS-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-ASBESTOS-SCL1: Any active or inactive asbestos disposal site. This landfill accepts asbestos waste.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. If the landfill accepts asbestos-containing waste materials from a source covered under 40 CFR 61.149, 40 CFR 61.150, or 40 CFR 61.155, the permittee shall meet the following operational requirements:
 - a. Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of 40 CFR 61.154(c) or (d) must be met. **(40 CFR 61.154(a))**
 - b. Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of 40 CFR 61.154(c)(1) must be met. **(40 CFR 61.154(b))**
 - i. Warning signs must be displayed at all entrances and at intervals of 100 m (330 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:
 - (1) Be posted in such a manner and location that a person can easily read the legend. **(40 CFR 61.154(b)(1)(i))**
 - (2) Conform to the requirements of 51 cm by 36cm (20 inches by 14 inches) upright format signs specified in 29 CFR 1910.145(d)(4) and 40 CFR 61.154(b)(1). **(40 CFR 61.154(b)(1)(ii))**
 - (3) The permittee shall display the legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in 40 CFR 61.154(b)(1). Spacing between any two lines must be at least equal to the height of the upper of the two lines. **(40 CFR 61.154(b)(1)(iii))**
 - ii. The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public. **(40 CFR 61.154(b)(2))**
 - iii. Upon request and supply of appropriate information, the appropriate AQD District Supervisor will determine whether a fence or a natural barrier adequately deters access by the general public. **(40 CFR 61.154(b)(3))**

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- c. Rather than meet the no visible emission requirement of 40 CFR 61.154(a), at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:
 - i. Be covered with at least 15 centimeters (6 inches) of compacted non-asbestos-containing material. **(40 CFR 61.154(c)(1))**, or
 - ii. Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the appropriate AQD District Supervisor. For purposes of 40 CFR 61.154(c)(2), any used, spent, or other waste oil is not considered a dust suppression agent. **(40 CFR 61.154(c)(2))**
 - d. Rather than meet the no visible emission requirement of 40 CFR 61.154(a), use an alternative emissions control method that has received prior written approval by the appropriate AQD District Supervisor according to the procedures described in 40 CFR 61.149(c)(2). **(40 CFR 61.154(d))**
2. The permittee shall comply with the requirements of 40 CFR 61.154. **(40 CFR 61.154)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The placement of gas collection devices determined in paragraph 40 CFR 60.759(a)(1) shall control all gas producing areas, except as provided by 40 CFR 60.759 (a)(3)(i) and (a)(3)(ii).
 - a. Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or non-degradable material deposited in the area, and shall be provided to the AQD upon request. **(40 CFR 60.759(a)(3)(i)) (40 CFR 60.759(a)(3))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For all asbestos-containing waste material received, the permittee of the active waste disposal site shall:
 - a. Maintain waste shipment records that include the following information: **(40 CFR 61.154(e)(1))**
 - i. The name, address, and telephone number of the waste generator. **(40 CFR 61.154(e)(1)(i))**
 - ii. The name, address, and telephone number of the transporter(s). **(40 CFR 61.154(e)(1)(ii))**
 - iii. The quantity of the asbestos-containing waste material in cubic meters (cubic yards). **(40 CFR 61.154(e)(1)(iii))**
 - iv. The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. Report in writing to the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the disposal site, by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report. **(40 CFR 61.154(e)(1)(iv))**
 - v. The date of the receipt. **(40 CFR 61.154(e)(1)(v))**
 - b. As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator. **(40 CFR 61.154(e)(2))**
 - c. Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record) **(40 CFR 61.154(e)(3))**

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2. The permittee shall maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area storage. **(40 CFR 61.154(f))**
3. The permittee shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or non-degradable waste excluded from collection as provided in 40 CFR 60.759(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in 40 CFR 60.759(a)(3)(ii). **(40 CFR 60.758(d)(2))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semi-annual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee shall submit to the appropriate AQD District Supervisor, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities. **(40 CFR 61.154(h))**
5. The permittee shall furnish upon request, and make available during normal business hours for inspection by the AQD, all records required by 40 CFR Part 61. **(40 CFR 61.154(i))**
6. Notify the AQD Technical Programs Unit and appropriate AQD District Office in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the appropriate AQD District Office at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:
 - a. Scheduled starting and completion dates. **(40 CFR 61.154(j)(1))**
 - b. Reason for disturbing the waste. **(40 CFR 61.154(j)(2))**
 - c. Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the AQD may require changes in the emission control procedures to be used. **(40 CFR 61.154(j)(3))**
 - d. Location of any temporary storage site and the final disposal site. **(40 CFR 61.154(j)(4))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

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IX. OTHER REQUIREMENT(S)

NA

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FG-LGCS-SCL1 FGACTIVECOLL-AAAA , FGPASSIVECOLL-AAAA , FGACTIVECOLL-OOO FGPASSIVECOLL-OOO	The landfill gas collection systems (active and passive) operated at the landfill.	EU-ALGCS-SCL1 (Active) EU-PLGCS-SCL1 (Passive) EUACTIVECOLL & EUPASSIVECOLL
FG-CONTROLS-SCL1 FGOPENFLAREOOO , FGOPENFLAREAAAA , FGVENTLFLAREOOO & FGVENTFLAREAAAA	The control equipment operated at the landfill (both active and passive). One (1) open flare (Active Landfill) and seven (7) ^{six (6)} self-igniting solar flares (Passive Landfill)	EU-OPENFLARE-SCL1 EU-VENTFLARE-SCL1
FG-EMERGENS-SCL1	Emergency engines subject to 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. New/Reconstructed emergency engines greater than 0 HP but less than 500 130 ordered on or after June 12, 2006, and manufactured after January 1, 2009	EU-GENERAC-28HP-NG (Generac) EU-KOHLER-18HP-NG (Kohler)

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FG-ACTIVECOLL-OOO, FGPASSIVECOLL-AAAA, FG-ACTIVECOLL-OOO & FGPASSIVECOLL-AAAA LGCS-SCL1
FLEXIBLE GROUP CONDITIONS

[EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace the now-obsolete Landfill NSPS \(40 CFR 60 Subpart WWW\). See templates provided in this application, which replace this section with two sections \(one for each regulation\).](#)

DESCRIPTION

~~FG-ACTIVECOLL-OOO, FG-PASSIVECOLL-OOO, FG-ACTIVECOLL-AAAA, FGPASSIVECOLL-AAAA LGCS-SCL1~~: The landfill gas collection systems (active and passive) operated at the landfill.

Emission Units: EU-~~ACTIVECOLLALGCS-SCL1~~ (active) and EU-~~PASSIVECOLLPLGCS-SCL1~~ (passive)

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POLLUTION CONTROL EQUIPMENT

One (1) open flare ~~and one self-igniting solar flare serving the active portion of the landfill~~ serving the active portion of the landfill and ~~six (6) six-(6)~~ self-igniting solar flares serving the closed portion of the landfill. The solar flares were approved by the United States Environmental Protection Agency.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time-Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time-Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- ~~1. Except as described below, the permittee shall operate each interior wellhead in the landfill gas collection system with a nitrogen level less than 20 percent or an oxygen level less than five percent. The permittee may establish a higher nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. Upon completion of the horizontal collection system the permittee shall monitor temperature. (40 CFR 60.753(e), 40 CFR 63.1955(a))~~
- ~~2. Except as described below, 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 the 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 60.753(e), 40 CFR 63.1955(a))~~
 - ~~a. For the passive gas collection system, as approved by U.S. EPA, the requirement to close valves within one hour in the event of control device malfunction is satisfied by following the vent flare manufacturer's specified maintenance and test procedures. (40 CFR 60.753(e), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a) and (e))~~

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3. Except as described below, the permittee shall operate a control or treatment system at all times when the collected gas is routed to the system. ~~(40 CFR 60.753(f), 40 CFR 63.1955(a))~~
- a. For the passive gas collection system, as approved by U.S. EPA, the requirement to operate the vent flare at all times when the collected gas is routed to it is satisfied by the continuous ignition system and following the vent flare manufacturer's specified maintenance and test procedures. ~~(40 CFR 60.753(e), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a) and (c))~~
4. If monitoring demonstrates that the operational requirement in 40 CFR 60.753(b), (c), or (d) are not met, corrective action shall be taken as specified in 40 CFR 60.755(a)(3) through (5) or 40 CFR 60.755(c). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements in this section and is not considered to be a RO Permit deviation as specified in General Requirement 23, 24, 28 or 29 of Part A. ~~(40 CFR 60.753(g), 40 CFR 63.1955(a))~~

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. A **passive** gas collection system shall comply with the following:
- a. The provisions specified in 40 CFR 60.752(b)(2)(ii)(A)(1), (2), and (4). ~~(40 CFR 60.752(b)(2)(ii)(B)(1), 40 CFR 63.1955(a))~~
- b. The U.S. EPA Final Control Plan. ~~(40 CFR 60.752(b)(2)(i)(C), 40 CFR 63.1955(c), U.S. EPA approved Final Control Plan)~~
2. For the purposes of determining sufficient density of gas collectors for compliance with 40 CFR 60.752(b)(2)(ii)(A)(2), the permittee shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the AQD, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards. ~~(40 CFR 60.755(a)(2), 40 CFR 63.1955(a))~~
3. The permittee is not required to expand the landfill gas collection system as required in 40 CFR 60.755(a)(3) during the first 180 days after landfill gas collection system start-up. ~~(40 CFR 60.755(a)(4), 40 CFR 63.1955(a))~~
4. The permittee may seek to demonstrate compliance with 40 CFR 60.752(b)(2)(ii)(A)(4) through the use of a landfill gas collection system not conforming to the specifications provided in 40 CFR 60.759 by providing information satisfactory to the AQD as specified in 40 CFR 60.752(b)(2)(i)(C) demonstrating that off-site migration is being controlled. ~~(40 CFR 60.755(a)(6), 40 CFR 63.1955(a))~~
5. The permittee may seek to install a landfill gas collection system that does not meet the specifications in 40 CFR 60.759 or may seek to monitor alternative parameters to those required by 40 CFR 60.753 through 40 CFR 60.756 by providing information satisfactory to the AQD as provided in 40 CFR 60.752(b)(2)(B) and (C) describing the design and operation of the alternate landfill gas collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. ~~(40 CFR 60.756(e), 40 CFR 63.1955(a))~~
6. For purposes of compliance with 40 CFR 60.753(a), the permittee shall place each well or design component as specified in the approved design plan as provided in 40 CFR 60.752(b)(2)(i). Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of:
- a. Five years or more if active. ~~(40 CFR 60.755(b)(1), 40 CFR 63.1955(a))~~
- b. Two years or more if closed or at final grade. ~~(40 CFR 60.755(b)(2), 40 CFR 63.1955(a))~~

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

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1. ~~The permittee shall monitor the nitrogen level of the landfill gas using Method 3A or 3C of appendix A of 40 CFR Part 60, unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i). (40 CFR 60.753(c)(1), 40 CFR 63.1955(a))~~
~~OR~~
~~The permittee shall monitor the oxygen level of the landfill gas using an oxygen meter as provided in Method 3A or 3C of appendix A of 40 CFR Part 60, except if: (40 CFR 60.753(c)(2), 40 CFR 63.1955(a))~~
 - a. ~~The span shall be set so that the regulatory limit is between 20 and 50 percent of the span. (40 CFR 60.753(c)(2)(i), 40 CFR 63.1955(a))~~
 - b. ~~A data recorder is not required. (40 CFR 60.753(c)(2)(ii), 40 CFR 63.1955(a))~~
 - c. ~~Only two calibration gases are required, a zero and span, and ambient air may be used as the span. (40 CFR 60.753(c)(2)(iii), 40 CFR 63.1955(a))~~
 - d. ~~A calibration error check is not required. (40 CFR 60.753(c)(2)(iv), 40 CFR 63.1955(a))~~
 - e. ~~The allowable sample bias, zero drift, and calibration drift are plus or minus 10 percent. (40 CFR 60.753(c)(2)(v), 40 CFR 63.1955(a))~~
 - f. ~~An alternative test method may be established as allowed by 40 CFR 60.752(b)(2)(i). (40 CFR 60.753(c)(2), 40 CFR 63.1955(a))~~
2. ~~For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(1), the permittee shall use the equations provided in 40 CFR 60.755(a)(1)(i) or (ii). The k and L₀ kinetic factors should be those published the most recent Compilation Air Pollutant Emission Factors (AP-42) or other site-specific values demonstrated to be appropriate and approved by the AQD. If k has been determined as specified in 40 CFR 60.754(a)(4), the value of k determined from the test shall be used. A value of no more than 15 years shall be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure. (40 CFR 60.755(a)(1), 40 CFR 63.1955(a))~~
 - a. ~~If a landfill gas collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, the equations in 40 CFR 60.755(a)(1)(i) and (ii). If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using the equations in 40 CFR 60.755(a)(1)(i) or (ii) or other methods shall be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment. (40 CFR 60.755(a)(1)(iii), 40 CFR 63.1955(a))~~
3. ~~For the purpose of identifying whether excess air infiltration into the landfill is occurring, the permittee shall monitor each well monthly for temperature and nitrogen or oxygen as provided in 40 CFR 60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within five calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the landfill gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternate timeline for correcting exceedances may be submitted to the AQD for approval. Upon completion of the horizontal collection system, oxygen (or nitrogen), temperature, and vacuum will be monitored. (40 CFR 60.755(a)(5), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(e))~~
4. ~~Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep the following records:~~
 - a. ~~A plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector shall be kept on file for the life of the collection system. (40 CFR 60.758(d), 40 CFR 63.1955(a))~~
 - b. ~~The installation date and location of all newly installed collectors as specified under 40 CFR 60.755(b). (40 CFR 60.758(d)(1), 40 CFR 63.1955(a))~~
 - c. ~~Documentation of the nature, date of deposition, amount, and location of asbestos-containing or non-degradable waste excluded from collection as provided in 40 CFR 40 CFR 60.759(a)(3)(i) as well as any non-productive areas excluded from collection as provided in 40 CFR 60.759(a)(3)(ii). (40 CFR 60.758(d)(2), 40 CFR 63.1955(a))~~
 - d. ~~Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for at least five years up-to-date, readily accessible records of all collection and control system exceedances of the operational standards in 40 CFR 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance. (40 CFR 60.758(e), 40 CFR 63.1955(a))~~

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See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above-Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the specified methods in 40 CFR 60.755(a)(1) through (a)(6) shall be used to determine whether the gas collection system is in compliance with 40 CFR 60.752(b)(2)(ii). **(40 CFR 60.755(a), 40 CFR 63.1955(a))**
2. The permittee shall develop and implement a written startup, shutdown, and malfunction (SSM) plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site. Failure to develop, implement, or maintain a copy of the SSM plan is a deviation. **(40 CFR 63.1935(a)(3), 40 CFR 63.1945(b), 40 CFR 63.1960, 40 CFR 63.1965(c))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).
²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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FG-OPENFLARE-000, FG-VENTFLARE-000, FGOPENFLARE-AAAA, FG-VENTFLARE-AAAAFG-CONTROLS-SCL1
FLEXIBLE GROUP CONDITIONS

EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart 000 to replace the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replace this section with two sections (one for each regulation)

DESCRIPTION

FG-OPENFLARE-000, FG-VENTFLARE-000, FGOPENFLARE-AAAA, FGVENTFLARE-AAAAFG-CONTROLS-SCL1: The control equipment operated at the landfill (both active and passive).

Emission Units: EU-OPENFLARE-SCL1, EU-VENTFLARE-SCL1

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POLLUTION CONTROL EQUIPMENT

One (1) open flare and one self-igniting solar flare (Active Landfill) and six (6) self-igniting solar flares (Passive Landfill).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time-Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time-Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The open flare shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in 40 CFR 60.756. ~~(40 CFR 60.752(b)(2)(iii)(B), 40 CFR 63.1955(a))~~

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The control system shall be designed and operated to reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at three percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test, except for open flares which shall be determined as specified in 40 CFR 60.18, to be completed no later than 180 days after the initial start-up of the approved control system using the test methods specified in 40 CFR 60.754(d). ~~(40 CFR 60.752(b)(2)(iii)(B), 40 CFR 63.1955(a))~~

2. The permittee may seek to demonstrate compliance with 40 CFR 60.752(b)(2)(iii) by using a control device other than an open flare or an enclosed combustor by providing information satisfactory to the AQD as provided in 40 CFR 60.752(b)(2)(i)(B) describing the operation of the alternate control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. ~~(40 CFR 60.756(d), 40 CFR 63.1955(a))~~

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V. TESTING/SAMPLING

~~Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))~~

NA

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VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

1. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep the following records for the life of the control system: ~~(40 CFR 60.758(b), 40 CFR 63.1955(a))~~
 - a. The maximum expected gas generation flow rate as calculated in 40 CFR 60.755(a)(1). The permittee may use another method to determine the maximum gas generation flow rate, if the method has been approved by the AQD. ~~(40 CFR 60.758(b)(1)(i), 40 CFR 63.1955(a))~~
 - b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 60.759(a)(1). ~~(40 CFR 60.758(b)(1)(ii), 40 CFR 63.1955(a))~~
2. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for five years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 CFR 60.756 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. ~~(40 CFR 60.758(c), 40 CFR 63.1955(a))~~

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. ~~(R 336.1213(3)(c)(ii))~~
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. ~~(R 336.1213(3)(c)(i))~~
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. ~~(R 336.1213(4)(e))~~
4. If the landfill is closed, the permittee shall submit a closure report to the AQD with the first annual Emissions Guidelines Report. The AQD may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR §258.60. If a closure report has been submitted to the AQD, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). ~~(40 CFR 60.757(d), 40 CFR 63.1980(b), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(e))~~
5. If the landfill is closed, the permittee shall submit an equipment removal report to the AQD 30 days prior to removal or cessation of operation of the control equipment. The equipment removal report shall contain all of the following items pursuant to 40 CFR 60.757(e)(1). ~~(40 CFR 60.757(e), 40 CFR 63.1955(a), 40 CFR 63.1980(b))~~
 - a. A copy of the closure report submitted in accordance with 40 CFR 60.757(d). ~~(40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a))~~
 - b. A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired. ~~(40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a))~~
 - c. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. ~~(40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a))~~

The AQD may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. ~~(40 CFR 60.757(e)(2), 40 CFR 63.1955(a))~~
6. Within 60 days of the completion of the initial performance test, the permittee, in order to comply with 40 CFR 60.752(b)(2)(iii), shall submit the following information with the initial performance test report required under 40 CFR 60.8: ~~(R 336.1931(f), 40 CFR 60.757(g), 40 CFR 63.1955(a), 40 CFR 63.1980(b))~~
 - a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded

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- from collection and the proposed sites for the future collection system expansion. ~~(40 CFR 60.757(g)(1), 40 CFR 63.1955(a))~~
- b. ~~The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based. (40 CFR 60.757(g)(2), 40 CFR 63.1955(a))~~
 - c. ~~The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. (40 CFR 60.757(g)(3), 40 CFR 63.1955(a))~~
 - d. ~~The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. (40 CFR 60.757(g)(4), 40 CFR 63.1955(a))~~
 - e. ~~The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. (40 CFR 60.757(g)(5), 40 CFR 63.1955(a))~~
 - f. ~~The provisions for the control of off-site migration. (40 CFR 60.757(g)(6), 40 CFR 63.1955(a))~~

See Appendix 8-4

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

- 1. ~~The permittee shall develop and implement a written startup, shutdown, and malfunction (SSM) plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site. Failure to develop, implement, or maintain a copy of the SSM plan is a deviation. (40 CFR 63.1935(a)(3), 40 CFR 63.1945(b), 40 CFR 63.1960))~~
- 2. ~~The permittee shall comply with the requirements in 40 CFR Part 63, Subpart AAAA, and 40 CFR 63.1960 through 63.1985. (40 CFR 63.1935(a)(3), 40 CFR 63.1955(b))~~
- 3. ~~The permittee shall calculate the three-hour block averages used to demonstrate compliance in the same way they are calculated in 40 CFR Part 60, Subpart WWW, except that the data collected during the events listed below are not to be included in any average computed under subpart AAAA: (40 CFR 63.1935(a)(3), 40 CFR 63.1975)~~
 - a. ~~Monitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments.~~
 - b. ~~Startups~~
 - c. ~~Shutdowns~~
 - d. ~~Malfunctions~~

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**FG-EMERGENS-SCL1
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION:

FG-EMERGENS-SCL1 (aka FG-NSPS JJJJ): Emergency engines subject to 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition (natural gas fired Spark Ignition) Internal Combustion Engines. Owners or operators of Emergency SI RICE are subject to this NSPS 4J if engine is manufactured after January 1, 2009. Emergency engines greater than 19 kW (25 HP) engine power are subject to emission rate standards.

1. Generac: Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22 kW - Natural Gas - 28 HP.
2. Kohler: Installed June 2013. Manufacture date is February 25, 2013. 14 kW - Natural Gas - 18 HP. Hence, Kohler (14 Kw / 18 HP < 19 kW / 25 HP) unit is not subject to NSPS 4J emissions standards.

Emission Units: EU-GENERAC-28HP-NG, EU-KOHLER-18HP-NG

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1. EU-GENERAC-28HP-NG (Generac): Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.
2. EU-KOHLER-18HP-NG (Kohler): Installed June 2013. Manufacture date is February 25, 2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.

POLLUTION CONTROL EQUIPMENT

Each engine is a certified engine with catalytic controls

I. EMISSION LIMIT

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO _x	10 g/HP-hr ^c	Hourly	Each engine in FG-EMERGENS- SCL1	SC VI.3 OR SC V.1	40 CFR 60.4233(e) (Table 1)
2. CO	387 g/HP-hr	Hourly	Each engine in FG-EMERGENS- SCL1	SC VI.3 OR SC V.1	40 CFR 60.4233(e) (Table 1)

^c The emission standards applicable to emergency engines between 25 HP and 130 HP are in terms of NOX + HC.

Note: No emission limit for engines ≤ 25 HP SI (NG) RICE

II. MATERIAL LIMITS

1. The permittee shall burn only natural gas in each engine in FG-EMERGENS-SCL1 except as allowed in 40 CFR 60.4243(e). Owners and operators of stationary SI natural gas fired engines may operate their engines using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but must keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the owners and operators are required to conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233. **(R 336.1201(3), 40 CFR 60.4243(e))**

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III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall comply with the emission standards specified in 40 CFR 60.4233(d), (Special Condition I.1 and I.2) by purchasing an engine certified to the emission standards in 40 CFR 60.4231(a) through (c), as applicable, for the same engine class and maximum engine power. **(40 CFR 60.4243(a))**
2. At all times, the permittee must operate and maintain any emergency stationary reciprocating internal combustion engine (RICE), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 60.4243(b))**
3. There is no time limit on the use of emergency stationary RICE in emergency situations. **(40 CFR 60.4243(d))**
4. The permittee may operate each engine in FG-EMERGENS-SCL1 for no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engines beyond 100 hours per calendar year. **(40 CFR 60.4243(d))**
5. Each engine in FG-EMERGENS-SCL1 may operate up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance and testing as provided in 40 CFR 60.4243(d)(1) through (d)(3). The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for the permittee to supply non-emergency power as part of a financial arrangement with another entity. **(40 CFR 60.4243(d))**
6. The permittee shall operate and maintain each engine in FG-EMERGENS-SCL1 such that it meets the emission limits in SC I.1 and SC I.2 over the entire life of the engine. **(40 CFR 60.4234)**
7. If the permittee purchased a certified engine, according to procedures specified in 40 CFR Part 60 Subpart JJJJ, for the same model year, the permittee shall meet the following requirements for each engine in FG-EMERGENS-SCL1:
 - a. Operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions.
 - b. Keep a maintenance plan and the permittee may only change those engine settings that are permitted by the manufacturer. If you do not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine.
 - c. Meet the requirements as specified in 40 CFR 1068 Subparts A through D, as applicable.

If the permittee does not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and be subject to testing to determine compliance with the emission limits. **(40 CFR 60.4243(b)(1) and (2))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall equip and maintain each engine in FG-EMERGENS-SCL1 with a non-resettable hours meter to track the operating hours. **(40 CFR 60.4237(b))**

V. TESTING/SAMPLING

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

1. If each engine in FG-EMERGENS-SCL1 is purchased as a certified engine but not installed, configured, operated, and maintained according to the manufacturer's emission-related written instructions, or the permittee changes emission-related settings in a way that is not permitted by the manufacturer, the permittee must demonstrate compliance as follows:

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- a. Conduct an initial performance test to demonstrate compliance with the applicable emission standards in 40 CFR 60.4233(e), within one year after each engine in FG-EMERGENS-SCL1 is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within one year after changing emission-related settings in a way that is not permitted by the manufacturer.
- b. If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4244.
- c. Conduct subsequent performance testing every 8,760 hours of engine operation or every three years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

If a performance test is required, no less than 30 days prior to testing, a complete test plan shall be submitted to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(40 CFR 60.8, 40 CFR 60.4243, 40 CFR 60.4244, 40 CFR 60.4245, 40 CFR Part 60 Subpart JJJJ)**

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall monitor and record the total hours of operation for each engine in FG-EMERGENS-SCL1 per calendar year, recorded through the non-resettable hours meter, in a manner acceptable to the District Supervisor, AQD. The permittee shall document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation. **(R 336.1205(1)(a), R 336.2803, R 336.2804, R 336.2810, 40 CFR 60.4243, 40 CFR 60.4245(b))**
2. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), R 336.2803, R 336.2804, 40 CFR 60.4243, 40 CFR 60.4245)**
3. The permittee shall keep, in a satisfactory manner, the following records for each engine in FG-EMERGENS-SCL1:
 - a. If certified: The permittee shall keep records of the documentation from the manufacturer that each engine in FG-EMERGENS-SCL1 is certified to meet the emission standards and information as required in 40 CFR Parts 90, 1048, 1054, and 1060, as applicable.
 - b. If non-certified: The permittee shall keep records of testing required in Special Condition V.1.

The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a), R 336.2803, R 336.2804, 40 CFR 60.4233(e), 40 CFR 60.4243, 40 CFR 60.4245(a))**

4. The permittee shall keep, in a satisfactory manner, the following records of maintenance activity for each engine in FG-EMERGENS-SCL1:
 - a. If certified: The permittee shall keep the manufacturer's emission-related written instructions and records demonstrating that each engine in FG-NSPS JJJJ has been maintained according to them, as specified in Special Condition III.8.
 - b. If non-certified: The permittee shall keep records of a maintenance plan, as required by 40 CFR 60.4243 and maintenance activities.

The permittee shall keep all records on file and make them available to the Department upon request. **(40 CFR 60.4243, 40 CFR 60.4245(a), 40 CFR Part 60 Subpart JJJJ)**

5. The permittee shall keep, in a satisfactory manner, either vendor emissions guarantees or the testing required by this Table, for each engine in FG-EMERGENS-SCL1. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a), R 336.2803, R 336.2804)**
6. If any engine in FG-EMERGENS-SCL1 does not meet the standards applicable to non-emergency engines for the applicable size and model year, then the permittee shall monitor and record the operation of each engine in FG-EMERGENS-SCL1 in emergency and non-emergency service that are recorded through the non-resettable

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hours meter, in a manner acceptable to the District Supervisor, AQD. The permittee shall document the time of operation of the engine and the reason the engine was in operation during that time. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) and (d), 40 CFR 60.4243, 40 CFR 60.4245(b))**

7. The permittee shall keep records of all notifications submitted to comply with 40 CFR Part 60 Subpart JJJJ, as required by this Table, and all documentation supporting any notification. **(40 CFR 60.4245(a))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

1. The permittee shall comply with the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subpart A and Subpart JJJJ, as they apply to FG-EMERGENS-SCL1. **(40 CFR Part 60 Subparts A and JJJJ)**
2. The permittee shall comply with the provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart ZZZZ, as they apply to FG-EMERGENS-SCL1, upon startup. **(40 CFR Part 63 Subparts A and ZZZZ)**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

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APPENDICES

Appendix 1-1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO _{2e}	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
EU	Emission Unit	gr	Grains
FG	Flexible Group	HAP	Hazardous Air Pollutant
GACS	Gallons of Applied Coating Solids	Hg	Mercury
GC	General Condition	hr	Hour
GHGs	Greenhouse Gases	HP	Horsepower
HVLP	High Volume Low Pressure*	H ₂ S	Hydrogen Sulfide
ID	Identification	kW	Kilowatt
IRSL	Initial Risk Screening Level	lb	Pound
ITSL	Initial Threshold Screening Level	m	Meter
LAER	Lowest Achievable Emission Rate	mg	Milligram
MACT	Maximum Achievable Control Technology	mm	Millimeter
MAERS	Michigan Air Emissions Reporting System	MM	Million
MAP	Malfunction Abatement Plan	MW	Megawatts
MDEQ	Michigan Department of Environmental Quality	NMOC	Non-methane Organic Compounds
MSDS	Material Safety Data Sheet	NO _x	Oxides of Nitrogen
NA	Not Applicable	ng	Nanogram
NAAQS	National Ambient Air Quality Standards	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM10	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSR	New Source Review	pph	Pounds per hour
PS	Performance Specification	ppm	Parts per million
PSD	Prevention of Significant Deterioration	ppmv	Parts per million by volume
PTE	Permanent Total Enclosure	ppmw	Parts per million by weight
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
		µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

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Appendix 2-1. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3-1. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4-1. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5-1. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6-1. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 1 (Smiths Creek). Therefore, this appendix is not applicable.

Appendix 7-1. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in EU-ALGCS-SCL1, EU-OPENFLARE-SCL1, and EU-VENTFLARE-SCL1.

[Appendix 7. Emission Calculations](#)

[The permittee must use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FGACTIONCOLL-AAAA and FGOPENFLARE-AAAA for 40 CFR Part 63, Subpart AAAA.](#)

[Calculation used to determine NMOC emissions from any nonproductive area](#)

[The following must be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Department upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. \(40 CFR 63.1962\(a\)\(3\)\(ii\)\)](#)

[The NMOC emissions from each section proposed for exclusion must be computed using Equation 7 \(40 CFR 63.1962\(a\)\(3\)\(ii\)\(A\)\):](#)

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$$Q_i = 2 k L_o M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

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Where:

Q_i = NMOC emission rate from the i th section, Mg/yr

k = methane generation rate constant, year⁻¹

L_o = methane generation potential, m³/Mg solid waste

M_i = mass of the degradable solid waste in the i th section, Mg

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of non-methane organic compounds, ppmv

3.6×10^{-9} = conversion factor

If the permittee is proposing to exclude, or cease gas collection and control from, nonproductive physically separated (e.g., separately lined) closed areas that already have gas collection systems, NMOC emissions from each physically separated closed area must be computed using either Equation 3 in 40 CFR 63.1959(c) or Equation 7 in 40 CFR 63.1962(a)(3)(ii)(A). **(40 CFR 63.1962(a)(3)(ii)(B))**

The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_o and C_{NMOC} provided in 40 CFR 63.1959(a)(1) or the alternative values from 40 CFR 63.1959(a)(5) must be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 63.1962(a)(3)(i). **(40 CFR 63.1962(a)(3)(iii))**

Net Heating Value of the gas being combusted in the flare:

The permittee has the choice of adhering to the heat content specifications in 40 CFR 63.11(b)(6)(ii) (equations below), and the maximum tip velocity specifications in 40 CFR 63.11(b)(7) or (b)(8), or adhering to the requirements in 40 CFR 63.11(b)(6)(i). **(40 CFR 63.11(b)(6))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

H_T = Net heating value of the sample,

MJ/scm; where the net enthalpy per mole of off gas is based on combustion at 25°C and 760 mmHg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \text{Constant } (1.740 \times 10^{-7}) \left(\frac{1}{\text{ppm}} \right) \left(\frac{\text{g mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

Where the standard temperature for $\left(\frac{\text{g mole}}{\text{scm}} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 63.14); and

H_i = Net heat of combustion of sample component i , kcal/g mole at 25°C and 760 mmHg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 (incorporated by reference as specified in 40 CFR 63.14) if published values are not available or cannot be calculated.

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Calculation for Vmax steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 63.11(b)(7)(i) must be calculated and recorded using the equation provided in 40 CFR 63.18(b)(7)(iii). **(40 CFR 63.18(b)(7)(iii))**

$$\text{Log}_{10}(V_{max}) = (H_T + 28.8)/31.7$$

Where:

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in 63.11(b)(6).

Calculation for Vmax for air-assisted flares

The maximum permitted velocity, V_{max} , for air-assisted flares must be calculated and recorded using the equation provided in 40 CFR 63.11(b)(8). **(40 CFR 63.11(b)(8))**

$$V_{max} = 8.71 + 0.708 (H_T)$$

Where:

V_{max} = Maximum permitted velocity, m/sec

8.71 = Constant

0.708 = Constant

H_T = The net heating value as determined in 63.11(b)(6)(ii).

1. Calculation used to determine NMOC emissions from any nonproductive area

The following shall be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the District Supervisor upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the following equation: **(40 CFR 60.759(a)(3)(ii), 40 CFR 63.1955(a))**

$$Q_i = 2 k L_0 M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

where,

Q_i = NMOC emission rate from the i th section, megagrams per year

k = methane generation rate constant, year⁻¹

L_0 = methane generation potential, cubic meters per megagram solid waste

M_i = mass of the degradable solid waste in the i th section, megagram

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of nonmethane organic compounds, parts per million by volume

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3.6×10^{-9} = conversion factor

The values for k and C_{NMOC} determined in field testing shall be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_0 and C_{NMOC} provided in 40 CFR 60.754(a)(1) or the alternative values from 40 CFR 60.754(a)(5) shall be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 60.759(a)(3)(i). **(40 CFR 60.759(a)(3)(iii), 40 CFR 63.1955(a))**

2. Net Heating Value of the gas being combusted in the flare:

The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). **(40 CFR 60.18(f)(3))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

where:

H_T = Net heating value of the sample,

MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \text{Constant}, 1.740 \times 10^{-7} \left(\frac{1}{\text{ppm}} \right) \left(\frac{\text{g mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

where the standard temperature for $\left(\frac{\text{g mole}}{\text{scm}} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 60.17); and

H_i = Net heat of combustion of sample component i , kcal/g mole at 25°C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 or 88 or D4809-95 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

3. Calculation of V_{max} steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(5). **(40 CFR 60.18(f)(5))**

$$\text{Log}_{10}(V_{max}) = (H_T + 28.8) / 31.7$$

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined above

4. Calculation of V_{max} for air-assisted flares

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The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(6). (~~40 CFR 60.18(f)(6)~~)

$$V_{max} = 8.706 + 0.7084 (H_T)$$

V_{max} = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

H_T = The net heating value as determined above

Appendix 8-1. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

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SECTION 2 – Blue Water Renewables, LLC

A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**
- Those conditions that are hereby incorporated in a state-only enforceable Source-Wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R 336.1214a(5))**
- Those conditions that are hereby incorporated in a federally enforceable Source-Wide PTI pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

4. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as "state-only" are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**
5. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**
6. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee's own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**
9. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities: **(R 336.1213(1)(d))**
 - a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
 - c. Inspect, at reasonable times, any of the following:
 - i. Any stationary source.
 - ii. Any emission unit.
 - iii. Any equipment, including monitoring and air pollution control equipment.
 - iv. Any work practices or operations regulated or required under the ROP.
 - d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.
10. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq., and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

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11. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**
12. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**
13. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

10. Any 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).² **(R 336.1370)**
11. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

13. Unless otherwise specified in this ROP, the permittee shall comply with Rule 301, which states, in part, "Except as provided in subrules 2, 3, and 4 of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:"² **(R 336.1301(1))**
 - a. A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
 - b. A limit specified by an applicable federal new source performance standard.

The grading of visible emissions shall be determined in accordance with Rule 303.
14. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
 - a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.¹ **(R 336.1901(a))**
 - b. Unreasonable interference with the comfortable enjoyment of life and property.¹ **(R 336.1901(b))**

Testing/Sampling

16. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1).² **(R 336.2001)**
17. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**
18. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(5))**

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Monitoring/Recordkeeping

18. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate. **(R 336.1213(3)(b))**
- The date, location, time, and method of sampling or measurements.
 - The dates the analyses of the samples were performed.
 - The company or entity that performed the analyses of the samples.
 - The analytical techniques or methods used.
 - The results of the analyses.
 - The related process operating conditions or parameters that existed at the time of sampling or measurement.
19. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

22. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a Responsible Official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**
23. A Responsible Official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507. **(R 336.1213(4)(c))**
24. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**
25. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP. **(R 336.1213(3)(c))**
- For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
 - For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
 - For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

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26. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following: **(R 336.1213(3)(c))**
- Submitting a certification by a Responsible Official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
 - Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a Responsible Official which states that; “based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete.” The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.
27. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**
28. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**
29. 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 appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a Responsible Official in a manner consistent with the CAA.² **(R 336.1912)**

Permit Shield

27. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance, if either of the following provisions is satisfied. **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
- The applicable requirements are included and are specifically identified in the ROP.
 - The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.
- Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.
28. Nothing in this ROP shall alter or affect any of the following:
- The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
 - The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
 - The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**

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- e. The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**
- 29. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
 - f. Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
 - g. Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**
 - h. Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
 - i. Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
 - j. State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**
- 34. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

- 35. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**
- 36. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**
- 37. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(10))**
- 38. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

- 35. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
 - a. If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
 - b. If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
 - c. If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
 - d. If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

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Renewals

38. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(9))**

Stratospheric Ozone Protection

39. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F.
40. If the permittee is subject to 40 CFR Part 82, and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

42. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).
43. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall comply with the requirements of 40 CFR Part 68, no later than the latest of the following dates as provided in 40 CFR 68.10(a):
- June 21, 1999,
 - Three years after the date on which a regulated substance is first listed under 40 CFR 68.130, or
 - The date on which a regulated substance is first present above a threshold quantity in a process.
44. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68.
45. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c). **(40 CFR Part 68)**

Emission Trading

47. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan's State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

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Permit to Install (PTI)

48. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule.² **(R 336.1201(1))**
49. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA.² **(R 336.1201(8), Section 5510 of Act 451)**
50. The terms and conditions of a PTI 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 the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI 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. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ.² **(R 336.1219)**
51. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months of the original PTI issuance date, or has been interrupted for 18 months, the applicable terms and conditions from that PTI, as incorporated into the ROP, shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P. O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI.² **(R 336.1201(4))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

SOURCE-WIDE CONDITIONS

POLLUTION CONTROL EQUIPMENT

Entire facility: Both Smiths Creek Landfill (N6207) and Blue Water Renewables, LLC (P0262 that is subsumed into N6207)

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	225 ² ^a tpy	12-month rolling time period as determined at the end of each calendar month.	FG-FACILITY-BWR2	SC VI.1 and Appendix 7-2	R 336.1205(3) 40 CFR 52.21(d)

^a The 225 tons of carbon monoxide (CO) emissions limit includes the emissions from Section 1 (landfill).

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

- The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period CO emission calculation records for source wide, as required by Special Condition I.1 and Appendix 7-2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² **R 336.1205(3), 40 CFR 52.21(d)**
- The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period landfill gas usage records for FG-FACILITY-BWR2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² **(R 336.1205(3), 40 CFR 52.21(c) and (d))**

VII. REPORTING

- Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

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2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-2

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the New Source Performance Standards as specified in 40 CFR Part 60, Subpart A and Subpart WWW.² **(40 CFR Part 60 Subpart A and WWW)**
2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart AAAA.² **(40 CFR Part 63 Subparts A and AAAA)**
3. Each Responsible Official shall certify annually the compliance status of the stationary source with all stationary Source-Wide conditions. This certification shall be included as part of the annual certification of compliance as required in the General Conditions in Part A and Rule 213(4)(c). **(R 336.1213(4)(c))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EU-TREATMENTSYS-BWR2	This emission unit treats landfill gas before it is used for electrical generation. The treatment system removes particulate to at least the 10 micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion during subsequent use. The treatment of the LFG ensures that a high percentage of NMOC will be destroyed in the internal combustion engines (spark ignition, lean burn, reciprocating internal combustion engine Caterpillar G3520C, 2,233 bhp at 100% load engines and associated generator producing 1.6 megawatt gross electrical output).	06/01/2011	NA
EU-ICENGINE1-BWR2	Spark ignition, lean burn, reciprocating internal combustion engine (Caterpillar G3520C, 2,233 bhp at 100% load) for combusting treated landfill gas to produce electricity (1.6 megawatt gross electrical output).	06/01/2011	FG-ICENGINES-BWR2
EU-ICENGINE2-BWR2	Spark ignition, lean burn, reciprocating internal combustion engine (Caterpillar G3520C, 2,233 bhp at 100% load) for combusting treated landfill gas to produce electricity (1.6 megawatt gross electrical output).	06/01/2011	FG-ICENGINES-BWR2

EU-TREATMENTSYS-BWR2 EMISSION UNIT CONDITIONS

DESCRIPTION

EU-TREATMENTSYS-BWR2: This emission unit treats landfill gas before it is used for electrical generation. The treatment system removes particulate to at least the 10 micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion during subsequent use. The treatment of the LFG ensures that a high percentage of NMOC will be destroyed in the internal combustion engines (spark ignition, lean burn, reciprocating internal combustion engine Caterpillar G3520C, 2,233 bhp at 100% load engines and associated generator producing 1.6 megawatt gross electrical output).

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatments system shall be subject to 40 CFR 60.752(b)(2)(iii)(A) or (B).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- The permittee shall operate the treatment system at all times when the collected gas is routed to the treatment system.² (40 CFR 60.753(f))
- The permittee shall operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system shall be subject to 40 CFR 60.752(b)(2)(iii)(A) or (B).² (40 CFR 60.752(b)(2)(iii)(C), 40 CFR 63.1955(a))
- The permittee shall operate the treatment system to comply with the provisions of 40 CFR 60.753(e) and (f) and 60.756(d).² (40 CFR 60.752(b)(2)(iv), 40 CFR 63.1955(a))

IV. DESIGN/EQUIPMENT PARAMETER(S)

- The treatment system shall be designed and installed as approved by AQD.² (40 CFR 60.752(b)(2)(iii)(C), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a))

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

See Appendix 5-2

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VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall keep up-to-date, readily accessible records of all control system exceedances of the operational standards in 40 CFR 60.753.² (40 CFR 60.758(e), 40 CFR 63.1955(a))
2. The permittee shall keep records of all preventive maintenance performed in accordance with the preventive maintenance plan (PMP) prepared pursuant to Special Condition IX.3.² (R 336.1201(3), 40 CFR 60.756(d))
3. The permittee shall provide information to the AQD as provided in 40 CFR 60.752(b)(2)(i)(B) describing the operation of the control device, the operating parameters which would indicate proper performance, and appropriate monitoring procedures. The AQD shall review the information and either approve it or request that additional information be submitted. The AQD may specify additional appropriate monitoring procedures.² (40 CFR 60.756(d))

See Appendices 3-2, 4-2, and 7-2

VII. REPORTING

1. The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD District Office, delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² (40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))
2. The permittee shall submit to the appropriate AQD District Office semi-annual reports for the landfill gas treatment system. The report shall be received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² (40 CFR 60.757(f), 40 CFR 63.1980(a), 40 CFR 63.1955(a))
 - a. Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(d).² (R 336.1213(3), 40 CFR 60.757(f)(1), 40 CFR 63.1980(a), 40 CFR 63.1955(a))
 - b. Description and duration of all periods when the gas stream is diverted from the treatment system through a bypass line or the indication of bypass flow.² (R 336.1201(3))
 - c. Description and duration of all periods when the treatment system was not operating for a period exceeding one hour and length of time the control device was not operating.² (40 CFR 60.757(f)(3), 40 CFR 63.1980(a), 40 CFR 63.1955(a))
 - d. Description and duration of all periods when the treatment system was not operated in accordance with the operating parameters and monitoring procedures that were part of the plan in Special Condition VII.1.² (R 336.1201(3))
3. The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD district office and it shall be delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² (40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))
4. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
5. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
6. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))

See Appendix 8-2

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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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The provisions of 40 CFR 60.755 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 one hour for the treatment system.² **(40 CFR 60.755(e), 40 CFR 63.1955(a))**
2. The permittee shall have developed and implemented a written SSM plan according to the provision in 40 CFR 63.6(e)(3) for EU-TREATMENTSYS-BWR2. A copy of the SSM plan shall be maintained on site.² **(40 CFR 63.1960, 40 CFR 63.1965(c))**
3. The permittee shall have developed and implemented a written preventive maintenance plan (PMP) for EU-TREATMENTSYS-BWR2. At a minimum, the plan shall include a schedule of maintenance activities consistent with the equipment manufacturers' recommendations, and the operating variables that will be monitored to detect a malfunction or failure. A copy of the PMP shall be maintained on site.² **(R 336.1201(3), R 336.1911, 40 CFR 60.756(d))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FG-ICENGINES-BWR2	Two (2) reciprocating internal combustion engines (RICE) that will only combust treated landfill gas for fuel. Each engine has an associated generator set for producing electricity (PTI No. 163-09D)	EU-ICENGINE1-BWR2 EU-ICENGINE2-BWR2

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FG-ICENGINES-BWR2 FLEXIBLE GROUP CONDITIONS

DESCRIPTION

FG-ICENGINES-BWR2 (may also be referred to as FG-ICENGINES): Two (2) reciprocating internal combustion engines (RICE) that will only combust treated landfill gas for fuel. Each engine has an associated generator set for producing electricity (PTI No. 163-09D).

Emission Units: EU-ICENGINE1-BWR2 (may also be referred to as EU-ICENGINE1) and EU-ICENGINE2-BWR2 (may also be referred to as EU-ICENGINE2)

POLLUTION CONTROL EQUIPMENT

Air-to-fuel ratio controller on each engine.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	16.3 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.1	R 336.1205 40 CFR 52.21(d)
2. CO	5.0 ² g/bhp-hr or 610 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
3. NO _x	3.0 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.1	40 CFR 52.21(c) and (d)
4. NO _x	2.0 ² g/bhp-hr or 150 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
5. Hydrogen Chloride (HCl)	0.51 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.1	R 336.1225

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Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
6. VOC	1.0 ² g/bhp-hr or 80 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
7. Formaldehyde	2.12 ² pph ¹ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.3	R 336.1225(2)
8. SO ₂	6.21 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC V.1	40 CFR 52.21(c) and (d)
9. SO ₂	54.4 ² tpy ^A	12-month rolling time period, as determined at the end of each calendar month	FG-ICENGINES- BWR2	SC V.4 SC VI.2 and Appendix A	R 336.1205(3)

^AThis limit is based on the calculation in Appendix 7-2

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall *only* burn landfill gas in FG-ICENGINES-BWR2 that has been treated in a system which complies with 40 CFR 60.752(b)(2)(iii)(C).² **(R 336.1225, 40 CFR 60.752(b)(2)(iii)(c))**
2. No later than 60 days after issuance of this permit, the permittee shall submit to the AQD District Supervisor, for review and approval, an updated malfunction abatement/preventative maintenance plan for FG-ICENGINES-BWR2. After approval of the malfunction abatement/preventative maintenance plan by the AQD District Supervisor, the permittee shall not operate FG-ICENGINES-BWR2 unless the malfunction abatement/preventative maintenance plan, 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:²
 - 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.

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If the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the malfunction abatement/preventative maintenance plan to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d))**

3. The permittee shall operate and maintain each engine in FG-ICENGINES-BWR2 such that it meets the emission limits established, over the entire life of the engine.² **(40 CFR 60.4234, 40 CFR 60.4243(b))**
4. If the permittee purchased a non-certified engine or a certified engine operating in a non-certified manner, the permittee shall keep a maintenance plan for each engine in FG-ICENGINES-BWR2 and shall, to the extent practicable, maintain and operate each engine in a manner consistent with good air pollution control practice for minimizing emissions.² **(40 CFR 60.4243(b))**
5. Each engine in FG-ICENGINES-BWR2 shall operate in a manner which reasonably minimizes HAP emissions.² **(40 CFR 63.6625(c))**
6. Each engine in FG-ICENGINES-BWR2 shall operate in a manner which minimizes time spent at idle during startup and minimize the startup time to a period needed for appropriate and safe loading of each engine, not to exceed 30 minutes.² **(40 CFR 63.6625(h))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate any engine in FG-ICENGINES-BWR2 unless that engine's air/fuel ratio controller is installed, maintained and operated in a satisfactory manner.² **(R 336.1702, R 336.1910)**
2. The permittee shall equip and maintain FG-ICENGINES-BWR2 with non-resettable hours meters to track the operating hours.² **(40 CFR 60.4243)**
3. The permittee shall equip FG-ICENGINES-BWR2 with a device to monitor and record the total landfill gas fuel usage for FG-ICENGINES-BWR2 on a continuous basis.² **(R 336.1205, R 336.1225, 40 CFR 63.6625(c))**
4. The design capacity of each engine in FG-ICENGINES-BWR2 shall not exceed 2,233 bhp, as specified by the equipment manufacturer.² **(R 336.1205, R 336.1225, R 336.1702)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within every five years from the date of completion of the most recent stack test, the permittee shall verify NO_x, HCl, CO, SO₂ emission rates from each engine in FG-ICENGINES-BWR2, by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in the table below:²

Pollutant	Test Method Reference
NO _x	40 CFR Part 60, Appendix A
SO ₂	40 CFR Part 60, Appendix A
CO	40 CFR Part 60, Appendix A
Hydrogen Chloride	40 CFR Part 60, Appendix A

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 30 days prior to testing, 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 testing, including any modifications to the method in the test protocol that are proposed after initial submittal. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and

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District Office within 60 days following the last date of the test. **(R 336.1205, R 336.1225, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) and (d))**

2. Except as provided in 40 CFR 60.4243(b), the permittee shall conduct an initial performance test for each engine in FG-ICENGINES-BWR2 within one year after startup of the engine and every 8,760 hours of operation (as determined through the use of a non-resettable hour meter) or three years, whichever occurs first, to demonstrate compliance with the emission limits in 40 CFR 60.4233(e), and as established in this permit, unless the engines have been certified by the manufacturer as required by 40 CFR Part 60 Subpart JJJJ and the permittee maintains the engine as required by 40 CFR 60.4243(a)(1). If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4244. No less than 30 days prior to any testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The permittee shall not test without prior approval of the test plan by AQD. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.² **(40 CFR 60.4243, 40 CFR 60.4244, 40 CFR Part 60 Subpart JJJJ)**
3. Within every five years from the date of completion of the most recent stack test, the permittee shall verify formaldehyde emission rates from each engine in FG-ICENGINES-BWR2 at maximum routine operating conditions, by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.² **(R 336.1225(2), R 336.2001, R 336.2003, R 336.2004)**
4. The permittee shall verify the hydrogen sulfide (H₂S) or total reduced sulfur (TRS) content of the landfill gas burned in FG-ICENGINES-BWR2 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. If at any time, the H₂S (TRS equivalent) concentration of the landfill gas sample exceeds 1,300 ppmv, the permittee shall sample and record the H₂S (TRS equivalent) concentration of the landfill gas daily and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken. Once the H₂S (TRS equivalent) concentration of the landfill gas determined from the daily samples are maintained below 1,300 ppmv, for one week after an exceedance, the permittee may resume weekly monitoring and recordkeeping. No less than 30 days prior to the initial test for each type of gas sampling, 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 shall keep all records on file at the facility and make them available to the Department upon request.² **(R 336.1205(3), R 336.1225, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21 (c) and (d))**

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall continuously monitor, in a satisfactory manner, the total landfill gas fuel usage and the hours of operation for FG-ICENGINES-BWR2.² **(40 CFR 52.21(c) and (d), 40 CFR Part 60 Subpart JJJJ)**
2. The permittee shall calculate and record the SO₂ emission rates from FG-ICENGINES-BWR2 using the equation in Appendix 8-2, C. The calculations shall utilize, at a minimum, weekly gas sampling data collected (Special Condition V.4), the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test. All records shall be kept on file at the facility and make them available to the Department upon request.² **(R 336.1205(3)), 40 CFR 52.21 (c) and (d))**
3. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.² **(R 336.1205, R 336.1225, R 336.1702, 40 CFR 52.21(c) and (d))**

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4. The permittee shall maintain the following record for each engine in FG-ICENGINES-BWR2. The following information shall be recorded and kept on file at the facility:²
- Engine manufacturer;
 - Date engine was manufactured;
 - Engine model number and model year;
 - Maximum engine power;
 - Engine serial number;
 - Engine specification sheet;
 - Date of initial startup of the engine; and
 - Date engine was removed from service at this stationary source.

All of the above information shall be stored in a format acceptable to the AQD District Supervisor. **(R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702, R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d))**

5. The permittee shall maintain records of all information necessary for all notifications and reports for each engine in FG-ICENGINES-BWR2, as specified in these special conditions as well as that information necessary to demonstrate compliance with the emission limits of this permit. This information shall include, but shall not be limited to the following:²
- Compliance tests and any testing required under the special conditions of this permit;
 - Monitoring data for the hours of operation, volumetric flow rate and landfill gas usage of each engine;
 - Calculated amount of landfill gas combusted in each engine on a monthly and 12-month rolling basis;
 - Hours of operation on a monthly and 12-month rolling basis;
 - Monthly average Btu content of the landfill gas burned;
 - Manufacturer's data, specifications, and operating and maintenance procedures;
 - Maintenance activities conducted according to the PM/MAP;
 - All calculations necessary to show compliance with the limits contained in this permit.

All of the above information shall be stored in a format acceptable to the AQD District Supervisor. **(R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d), 40 CFR Part 60 Subpart JJJJ, 40 CFR 63.6625(c))**

See Appendix 7-2

VII. REPORTING

- Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
- Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
- Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
- The permittee shall submit an initial notification as required by 40 CFR 60.7(a)(1) for each engine in FG-ICENGINES-BWR2 if the engine(s) installed is/are not certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231. The notification shall include the information below, as specified in 40 CFR 60.4245 (c)(1) through (5).²
 - Name and address of the owner or operator. **(40 CFR 60.4245(c)(1))**
 - The address of the affected source. **(40 CFR 60.4245(c)(2))**
 - Engine information including engine manufacturer, model, model year, date of manufacture, maximum engine power, engine displacement, engine family, serial number. **(40 CFR 60.4245(c)(3))**

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- d. Emission control equipment. **(40 CFR 60.4245(c)(4))**
- e. Fuel used. **(40 CFR 60.4245(c)(5))**

The permittee shall submit the initial notification to the AQD District Supervisor in an acceptable format within 30 days of commencing construction of any engine in FGICENGINES. **(40 CFR Part 60, Subpart JJJJ)**

- 5. The permittee shall submit an annual report in accordance with Table 7 of 40 CFR Part 63, Subpart ZZZZ to the appropriate AQD district office by no later than January 31. The following information shall be included in this annual report:² **(40 CFR 63.6650(g), 40 CFR 63.6650(b)(5))**
 - a. The fuel flow rate and the heating values that were used in the permittee's calculations. Also, the permittee must demonstrate that the percentage of heat input provided by landfill gas or digester gas is equivalent to 10 percent or more of the total fuel consumption on an annual basis. **(40 CFR 63.6650(g)(1))**
 - b. The operating limits provided in the permittee's federally enforceable permit, and any deviations from these limits. **(40 CFR 63.6650(g)(2))**
 - c. Any problems or errors suspected from the fuel flow rate meters. **(40 CFR 63.6650(g)(3))**

See Appendix 8-2

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVICENGINE1	16 ²	38 ²	R 336.1225 40 CFR 52.21 (c) and (d)
2. SVICENGINE2	16 ²	38 ²	R 336.1225 40 CFR 52.21 (c) and (d)

IX. OTHER REQUIREMENT(S)

- 1. The permittee shall comply with all applicable provisions of the New Source Performance Standards as specified in 40 CFR Part 60, Subpart A and Subpart JJJJ, as they apply to FGICENGINES.² **(40 CFR Part 60 Subpart A and JJJJ)**
- 2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart ZZZZ, as they apply to FGICENGINES.² **(40 CFR Part 63, Subparts A and ZZZZ)**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1-2. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO _{2e}	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
EU	Emission Unit	gr	Grains
FG	Flexible Group	HAP	Hazardous Air Pollutant
GACS	Gallons of Applied Coating Solids	Hg	Mercury
GC	General Condition	hr	Hour
GHGs	Greenhouse Gases	HP	Horsepower
HVLP	High Volume Low Pressure*	H ₂ S	Hydrogen Sulfide
ID	Identification	kW	Kilowatt
IRSL	Initial Risk Screening Level	lb	Pound
ITSL	Initial Threshold Screening Level	m	Meter
LAER	Lowest Achievable Emission Rate	mg	Milligram
MACT	Maximum Achievable Control Technology	mm	Millimeter
MAERS	Michigan Air Emissions Reporting System	MM	Million
MAP	Malfunction Abatement Plan	MW	Megawatts
MDEQ	Michigan Department of Environmental Quality	NMOC	Non-methane Organic Compounds
MSDS	Material Safety Data Sheet	NO _x	Oxides of Nitrogen
NA	Not Applicable	ng	Nanogram
NAAQS	National Ambient Air Quality Standards	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM10	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSR	New Source Review	pph	Pounds per hour
PS	Performance Specification	ppm	Parts per million
PSD	Prevention of Significant Deterioration	ppmv	Parts per million by volume
PTE	Permanent Total Enclosure	ppmw	Parts per million by weight
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
		µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

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Appendix 2-2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3-2. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4-2. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5-2. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6-2. Permits to Install

The following table lists any PTIs issued or ROP revision applications received since the effective date of the previously issued ROP No. MI-ROP-P0262-2012. Those ROP revision applications that are being issued concurrently with this ROP renewal are identified by an asterisk (*). Those revision applications not listed with an asterisk were processed prior to this renewal.

Source-Wide PTI No MI-PTI-P0262-2012a dated August 18, 2015 is being reissued as Source-Wide PTI No. MI-PTI-N6207-18.

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)
163-09D, dated June 1, 2017	201700078*, dated June 21, 2017	PTI revision to increase the amount of allowable hydrogen sulfide (H ₂ S) content of the landfill gas to 1,300 ppmv prior to being burned in the two existing landfill gas fired engines, located at 6797 Smiths Creek Road, Smiths Creek, Michigan.	EUTREATMENTSYS EUCENGINE1 EUCENGINE2

Appendix 7-2. Emission Calculations

Specific emission calculations to be used with monitoring, testing or recordkeeping data are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible group Special Conditions. Therefore, this appendix is not applicable.

Appendix 8-2. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

C. Other Reporting - Calculations

Permit No. 163-09D APPENDIX A Procedures for Calculating Emissions

The permittee shall demonstrate compliance with the emission limits in this permit by vendor data, stack testing, and/or gas testing.

Vendor Data or Stack Testing:

The permittee shall use emission factors from vendor data or from source specific testing (if stack test data is available, use most recent stack test data), as available for each emission unit included in FGFACILITY. The permittee shall use emission factors contained in the most recent AP-42 (Compilation of Air Pollutant Emission Factors) or the most recent FIRE (Factor Information Retrieval) database if vendor or stack testing data is not available. If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions. The permittee shall document the source of each emission factor used in the calculations.

Calculation for Monthly SO₂ Emissions:

The following calculation for SO₂ emissions shall utilize the monthly average of the weekly (or daily, if required) H₂S concentration measurements from test data collected, the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test.

SO₂ Emissions (tons per month)

$$= \frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} \times \frac{1.1733 \text{ mols Sulfur}}{\text{ft}^3} \times \frac{34.08 \text{ grams}}{\text{mol Sulfur}} \times \frac{\text{pound}}{453.59 \text{ grams}}$$

$$\times \frac{1 \text{ ton}}{2,000 \text{ pounds}} \times \frac{1.88 \text{ SO}_2}{\text{H}_2\text{S}} \text{ Molecular Weight Ratio} \times \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} \times \text{Monthly Landfill Gas Usage (ft}^3\text{/month)}$$

This is the template for 40 CFR Part 62, Subpart OOO - 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 which have actual non-methane organic compounds (NMOC) emissions equal to or greater than 34 megagrams per year.

This template is meant to be inserted into the ROP shell document along with the associated parts and appendices that are specific to this template.

Included is the emission unit name, description, and some instructions for Part C, the Emission Unit Summary Table and Part D, Flexible Group Special Conditions. Other emission units may be needed for the ROP.

C. EMISSION UNIT SPECIAL CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EULANDFILL	A Municipal Solid Waste (MSW) landfill that commenced construction, reconstruction, or modification on or before July 17, 2014 and has not been modified or reconstructed since July 17, 2014 and has accepted waste at any time since November 8, 1987. The MSW landfill has a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions equal to or greater than 34 Mg per year.	12/31/1989 / Modified May, 2014	FGLANDFILL-OOO
EUACTIVECOLL & EUPASSIVECOLL	This emission unit represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment.	10/31/2002	FGLANDFILL-OOO FGACTIVECOLL-OOO FGPASSIVECOLL-OOO
EUTREATMENTSYS NOTE: These requirements should be included in Section 2 of the ROP (for Blue Water Renewables, LLC) since they own and operate the Treatment System and associated RICE engines.	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. The treatment system removes particulate to at least the 10-micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion of gas for subsequent use.	06/01/2011	FGLANDFILL-OOO FGTREATMENTSYS-OOO
EUOPENFLARE	Open flare is an open combustor without enclosure or shroud.	10/31/2002	FGLANDFILL-OOO FGOPENFLARE-OOO

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EUVENTFLARE	Consists of seven self-igniting (solar powered) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of six of the solar flares was performed on March 18, 2003; the 7 th flare will be tested within 180 days of startup.	10/31/2002 (six flares) & 9/21/2022 (7 th flare)	FGLANDFILL-OOO FGVENTFLARE-OOO

D. FLEXIBLE GROUP SPECIAL CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FGLANDFILL-OOO	This flexible group represents the general MSW landfill with a required collection and control system. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	EULANDFILL
FGACTIVECOLL-OOO & FGPASSIVECOLL-OOO	This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment, and the passive landfill gas collection system. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	EUACTIVECOLL & EUPASSIVECOLL
FGTREATMENTSYS-OOO	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	This flexible group should be included in Section 2 of the ROP for Blue Water Renewables, LLC
FGOPENFLARE-OOO	Open (non-enclosed) flare is an open combustor without enclosure or shroud. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	EUOPENFLARE
FGVENTFLARE-OOO	Self-igniting (solar powered) flares are open combustors and are not enclosed or shrouded. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.	EUVENTFLARE

**FGLANDFILL-000
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

This flexible group represents the general MSW landfill with a required active and passive collection and control system. This flexible group contains 40 CFR Part 62, Subpart 000 requirements.

Emission Units: EULANDFILL, EUACTIVECOLL, EUTREATMENTSYS, EUOPENFLARE & EUVENTFLARE

POLLUTION CONTROL EQUIPMENT

Most of the landfill gas is collected and combusted in an open flare or combusted in the internal combustion engines to generate electricity. Some gas is combusted in passive solar vent flares.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

NA

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee must install a collection and control system that captures the landfill gas generated within the landfill according to the requirements in 40 CFR 62.16714(b) and 40 CFR 62.16714(c). **(40 CFR 62.16714(a)(3))**
2. The permittee must route all the collected landfill gas to at least one of the following:
 - a. A non-enclosed flare designed in accordance with 40 CFR 60.18 except as noted in 40 CFR 62.16722(d). **(40 CFR 62.16714(c)(1))**
 - b. A control system designed and operated to reduce NMOC by 98 weight percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 ppmv on dry basis, as hexane at 3% oxygen. **(40 CFR 62.16714(c)(2))**
 - c. To a treatment system that processes the collected gas for subsequent sale or beneficial use. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either 40 CFR 62.16714(c)(1) or (2). **(40 CFR 62.16714(c)(3))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report that triggered 40 CFR 62.16714(e), the current amount of solid waste in place, and the year-by-year waste

acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable. The permittee must keep all records on file in a format acceptable to the AQD District Supervisor and make them available upon request. **(R 336.1213(3), 40 CFR 62.16726(a))**

2. Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, as provided in the definition of "design capacity", must keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable. **(40 CFR 62.16726(f))**
3. If reporting leachate or other liquids addition under 40 CFR 62.16724(l), the permittee must keep records of any engineering calculations or company records used to estimate the quantities of leachate or liquids added, the surface areas for which the leachate or liquids were applied, and the estimates of annual waste acceptance or total waste in place in the areas where leachate or liquids were applied. **(40 CFR 62.16726(j))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
5. Annually, the permittee must submit a liquids addition report, to the Administrator, within 365 days after the date the previous report was submitted with the following information: **(40 CFR 62.16724(l))**
 - a. Volume of leachate recirculated (gallons per year) and the reported basis of those estimates (records or engineering estimates). **(40 CFR 62.16724(l)(1))**
 - b. Total volume of all other liquids added (gallons per year) and the reported basis of those estimates (records or engineering estimates). **(40 CFR 62.16724(l)(2))**
 - c. Surface area (acres) over which the leachate is recirculated (or otherwise applied). **(40 CFR 62.16724(l)(3))**
 - d. Surface area (acres) over which any other liquids are applied. **(40 CFR 62.16724(l)(4))**
 - e. The total waste disposed (megagrams) in the areas with recirculated leachate and/or added liquids based on on-site records to the extent data are available, or engineering estimates and the reported basis of those estimates. **(40 CFR 62.16724(l)(5))**
 - f. The annual waste acceptance rates (megagrams per year) in the areas with recirculated leachate and/or added liquids, based on on-site records to the extent data are available, or engineering estimates. **(40 CFR 62.16724(l)(6))**
 - g. The initial report must contain items (a) through (f) for the initial annual reporting period as well as for each of the previous 10 years, to the extent historical data are available in on-site records, and the report must be submitted no later than June 21, 2022. Subsequent annual reports must contain items (a) through (f) and be submitted no later than 365 days after the date the previous report was submitted and contain data for the most recent 365 days. **(40 CFR 62.16724(l)(7))**
6. The permittee must submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment. **(40 CFR 62.16724(g))**

- a. The equipment removal report must contain all of the following items:
 - i. A copy of the closure report submitted in accordance with 40 CFR 62.16724(f). **(40 CFR 62.16724(g)(1)(i))**
 - ii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 34 megagrams or greater of NMOC per year. **(40 CFR 62.16724(g)(1)(iii))**
 - iii. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired. **(40 CFR 62.16724(g)(1)(ii))**
 - b. The Administrator may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 62.16714(f) have been met. **(40 CFR 62.16724(g)(2))**
7. The permittee must submit a closure report to the Administrator within 30 days of waste acceptance cessation. The Administrator may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Administrator, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). **(40 CFR 62.16724(f))**
8. The permittee must submit reports electronically according to the following:
- a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the Administrator at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. **(40 CFR 62.16724(j)(2))**
9. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENTS

1. If the permittee has submitted a design plan under 40 CFR 62.16724(d), the permittee must submit a revised design plan to the Administrator for approval as follows:

- a. At least 90 days before expanding operations to an area not covered by the previously approved design plan. **(40 CFR 62.16724(e)(1))**
- b. Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted to the Administrator under 40 CFR 62.16724(d). **(40 CFR 62.16724(e)(2))**
2. The collection and control system may be capped, removed, or decommissioned if the following criteria are met:
 - a. The landfill is a closed landfill (as defined in 40 CFR 62.16730). A closure report must be submitted to the Administrator as provided in 40 CFR 62.16724(f). **(40 CFR 62.16714(f)(1))**
 - b. The collection and control system must have been in operation a minimum of 15 years or the landfill owner or operator demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flow. **(40 CFR 62.16714(f)(2))**
 - c. Following the procedures specified in 40 CFR 62.16718(b), the calculated NMOC emission rate at the landfill is less than 34 Mg per year on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart. **(40 CFR 62.16714(f)(3))**
3. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

<p style="text-align: center;">FGACTIVECOLL-000 & FGPASSIVECOLL-000 FLEXIBLE GROUPCONDITIONS</p>
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DESCRIPTION

This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment. This group also includes the passive collection system. This flexible group contains 40 CFR Part 62, Subpart 000 requirements.

Emission Unit: EUACTIVECOLL

POLLUTION CONTROL EQUIPMENT

One (1) open flare and one self-igniting solar flare serving the active portion of the landfill and six (6) self-igniting solar flares serving the closed portion of the landfill. The solar flares were approved by the United States Environmental Protection Agency.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

NA

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee must install an active collection system that meets the following requirements:
 - a. Designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control system equipment. **(40 CFR 62.16714(b)(2)(i))**
 - b. Collects gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 5 years or more if active; or 2 years or more if closed or at final grade. **(40 CFR 62.16714(b)(2)(ii))**
 - c. Each well must be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of 5 years or more if active; or 2 years or more if closed at final grade. **(40 CFR 62.16720(b))**
 - d. Collects gas at a sufficient extraction rate. **(40 CFR 62.16714(b)(2)(iii))**
 - e. Designed to minimize off-site migration of subsurface gas. **(40 CFR 62.16714(b)(2)(iv))**
2. The permittee must route the collected gas to a treatment system that processes the collected gas for subsequent sale or beneficial use such as fuel for combustion, production of vehicle fuel, production of high-BTU gas for pipeline injection, or use as a raw material in a chemical manufacturing process. Venting of treated landfill gas to the ambient air is not allowed. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either 40 CFR 62.16714(c)(1) or (2). **(40 CFR 62.16714(c)(3))**
3. The permittee must site active gas collection devices as required in 40 CFR 62.16728 and must control all gas producing areas, except as provided below.

- a. Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under 40 CFR 62.16726(d). **(40 CFR 62.16728(a)(3)(i))**
 - b. Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section must be computed using the equation in Appendix 7. **(40 CFR 62.16728(a)(3)(ii))**
4. The permittee must install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead. **(40 CFR 62.16722(a))**

See Appendix 7

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Each permittee that chooses to comply with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, must keep records of the date upon which the permittee started complying with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961 and must keep records according to 40 CFR 63.1983(e)(1) through (5). **(40 CFR 62.16726(e))**
2. The permittee must keep up-to-date, readily accessible records for the life of the control equipment of the data where the permittee seeks to demonstrate compliance with 40 CFR 62.16714(b) listed as follows:
 - a. The maximum expected gas generation flow rate as calculated in 40 CFR 62.16720(a)(1). **(40 CFR 62.16726(b)(1)(i))**
 - b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 62.16728(a)(1). **(40 CFR 62.16726(b)(1)(ii))**
3. The permittee must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector that matches the labeling on the plot map and the following up-to-date, readily accessible records. **(40 CFR 62.16726(d))**
 - a. The installation date and location of all newly installed collectors as specified under 40 CFR 62.16720(b). **(40 CFR 62.16726(d)(1))**
 - b. Documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in 40 CFR 62.16728(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in 40 CFR 62.16728(a)(3)(ii). **(40 CFR 62.16726(d)(2))**
4. The permittee must maintain the following information:
 - a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion. **(40 CFR 62.16724(i)(1))**
 - b. The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based. **(40 CFR 62.16724(i)(2))**

- c. The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. **(40 CFR 62.16724(i)(3))**
- d. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. **(40 CFR 62.16724(i)(4))**
- e. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. **(40 CFR 62.16724(i)(5))**
- f. The provisions for the control of off-site migration. **(40 CFR 62.16724(i)(6))**

VII. REPORTING

- 1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
- 2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
- 3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
- 4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed at 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
- 5. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the corrective action and the corresponding timeline reporting requirements in 40 CFR 63.1981(j) in lieu of 40 CFR 62.16724(k). **(40 CFR 62.16724(k))**
- 6. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the USEPA at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. **(40 CFR 62.16724(j)(2))**

7. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENTS

1. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

**FGTREATMENTSYS-OOO
FLEXIBLE GROUPCONDITIONS**

NOTE: THIS SET OF FLEXIBLE GROUP CONDITIONS SHOULD BE PLACED IN SECTION 2 OF THE ROP (BLUE WATER RENEWABLES, LLC)

DESCRIPTION

A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.

Emission Unit: EUTREATMENTSYS

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatment system subject to 40 CFR 62.16714(c)(1) or (2).

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system must comply with 40 CFR 62.16714(c)(1) or (2). **(40 CFR 62.16714(c)(3) and (4))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Each permittee that chooses to comply with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, must keep records of the date upon which the permittee started complying with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961 and must keep records according to 40 CFR 63.1983(e)(1) through (5). **(40 CFR 62.16726(e))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the USEPA at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. **(40 CFR 62.16724(j)(2))**
6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the

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permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

**FGOPENFLARE-OOO & FGVENTFLARE-OOO
FLEXIBLE GROUPCONDITIONS**

DESCRIPTION

Open (non-enclosed) flare is an open combustor without enclosure or shroud. Seven (7) self-igniting solar flares. This flexible group contains 40 CFR Part 62, Subpart OOO requirements.

Emission Unit: EUOPENFLARE & EUVENTFLARE

POLLUTION CONTROL EQUIPMENT

Open (non-enclosed) flare & seven (7) self-igniting solar flares

I. EMISSION LIMIT(S)

1. There must be no visible emissions from EUOPENFLARE and EUVENTFLARE except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. **(40 CFR 60.18(c)(1))**

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate the flare in accordance with 40 CFR 60.18. **(40 CFR 62.16714(c)(1))**
2. The flare must be operated with a flame present at all times. **(40 CFR 60.18(c)(2))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within 180 days of permit issuance, the permittee must verify visible emissions, the net heating value, and exit velocity from EUOPENFLARE and at a minimum, every five years from the date of the last test, thereafter. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004, 40 CFR 60.18(f))**
2. The permittee must notify the AQD Technical Programs Unit Supervisor and the District Supervisor not less than 30 days of the time and place before performance tests are conducted. **(R 336.1213(3))**

See Appendix 7

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep up-to-date, readily accessible records for the life of the control equipment of the data as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring must be maintained for a minimum of 5 years. Records of the control device vendor specifications must be maintained until removal. **(40 CFR 62.16726(b))**

2. For EUOPENFLARE, where the permittee seeks to demonstrate compliance with 40 CFR 62.16714(c)(1) through use of a non-enclosed flare, the flare type (*i.e.*, steam-assisted, air-assisted, or non-assisted), 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; and 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 62.16726(b)(4))**
3. The following records for the flare must be maintained onsite:
 - a. The net heating value of the gas being combusted in the flare must be calculated and recorded using the equation provided in Appendix 7. **(40 CFR 60.18(f)(3))**
 - b. The exit velocity for steam-assisted, air-assisted, or non-assisted flares as determined by the methods specified in 40 CFR 60.18(f)(4) provided in Appendix 7. **(40 CFR 60.18(f)(4))**
4. Each permittee that chooses to comply with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, must keep records of the date upon which the permittee started complying with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961. **(40 CFR 62.16726(e))**

See Appendix 7

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed at 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the USEPA at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must

begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted.

(40 CFR 62.16724(j)(2))

6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO ₂ e	Carbon Dioxide Equivalent
CEMS	Continuous Emission Monitoring System	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
Department/ department	Michigan Department of Environment, Great Lakes, and Energy	gr	Grains
EGLE	Michigan Department of Environment, Great Lakes, and Energy	HAP	Hazardous Air Pollutant
EU	Emission Unit	Hg	Mercury
FG	Flexible Group	hr	Hour
GACS	Gallons of Applied Coating Solids	HP	Horsepower
GC	General Condition	H ₂ S	Hydrogen Sulfide
GHGs	Greenhouse Gases	kW	Kilowatt
HVLP	High Volume Low Pressure*	lb	Pound
ID	Identification	m	Meter
IRSL	Initial Risk Screening Level	mg	Milligram
ITSL	Initial Threshold Screening Level	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	NMOC	Non-methane Organic Compounds
MAP	Malfunction Abatement Plan	NO _x	Oxides of Nitrogen
MSDS	Material Safety Data Sheet	ng	Nanogram
NA	Not Applicable	PM	Particulate Matter
NAAQS	National Ambient Air Quality Standards	PM ₁₀	Particulate Matter equal to or less than 10 microns in diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM _{2.5}	Particulate Matter equal to or less than 2.5 microns in diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	%	Percent
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SDS	Safety Data Sheet	TAC	Toxic Air Contaminant
SNCR	Selective Non-Catalytic Reduction	Temp	Temperature
SRN	State Registration Number	THC	Total Hydrocarbons
TEQ	Toxicity Equivalence Quotient	tpy	Tons per year
USEPA/EPA	United States Environmental Protection Agency	µg	Microgram
VE	Visible Emissions	µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. **(R 336.1213(4)(a), R 336.1119(a)(ii))**

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 1 (Smiths Creek). Therefore, this appendix is not applicable.

Appendix 7. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FGACTIONECOLL-000 and FGOPENFLARE-000.

Calculation used to determine NMOC emissions from any nonproductive area

The following shall be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Administrator upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section must be computed using the following equation: **(40 CFR 62.16728(a)(3)(ii)(A))**

$$Q_i = 2 k L_o M_i (e^{-kti}) (C_{NMOC}) (3.6 \times 10^{-9})$$

Where:

Q_i = NMOC emission rate from the i th section, Mg per year

k = methane generation rate constant, year⁻¹

L_o = methane generation potential, cubic meters per Mg solid waste

M_i = mass of the degradable solid waste in the i th section, Mg

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of non-methane organic compounds, ppm by volume

3.6×10^{-9} = conversion factor

The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_0 and C_{NMOC} provided in 40 CFR 62.16718 or the alternative values from 40 CFR 62.16718 must be used. The mass of non-degradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the non-degradable material is documented as provided in 40 CFR 62.16728(a)(3)(iii).

Net Heating Value of the gas being combusted in the flare:

The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). **(40 CFR 60.18(f)(3))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \text{Constant, } 1.740 \times 10^{-7} \left(\frac{1}{\text{ppm}} \right) \left(\frac{\text{g mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

where the standard temperature for $\left(\frac{\text{g mole}}{\text{scm}} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 60.17); and

H_i = Net heat of combustion of sample component i , kcal/g mole at 25°C and 760 mmHg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

Calculation for Vmax steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(5). **(40 CFR 60.18(f)(5))**

$$\text{Log}_{10}(V_{max}) = (H_T + 28.8) / 31.7$$

Where:

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in 60.18(f)(3).

Calculation for Vmax for air-assisted flares

The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(6). **(40 CFR 60.18(f)(6))**

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$$V_{\max} = 8.706 + 0.7084 (H_T)$$

Where:

V_{\max} = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

H_T = The net heating value as determined in 60.18(f)(3).

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use EGLE, AQD, Report Certification form (EQP 5736) and EGLE, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, emission unit and/or flexible group special conditions. Therefore, Part B of this appendix is not applicable.

This is the template for 40 CFR Part 63, Subpart AAAA - National Emission Standards for Hazardous Air Pollutants (NESHAP) for a Municipal Solid Waste (MSW) landfill that has accepted waste since November 8, 1987, or has additional capacity for waste deposition and meets any one of the following three criteria: is a major source as defined in 40 CFR 63.2, is collocated with a major source as defined in 40 CFR 63.2, is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m³) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to 40 CFR 63.1959.

This template is meant to be inserted into the ROP shell document along with the associated parts and appendices that are specific to this template.

Included in this template is Part D, Flexible Group Special Conditions including the Flexible Group Summary Table.

D. FLEXIBLE GROUP SPECIAL CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FGLANDFILL-AAAA	This flexible group represents the general MSW landfill with a required collection and control system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EULANDFILL EUACTIVECOLL EUTREATMENTSYS EUOPENFLARE EUVENTFLARE
FGACTIVECOLL-AAAA & FGPASSIVECOLL-AAAA	This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment, and the passive gas collection system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUACTIVECOLL & EU-PASSIVECOLL
FGTREATMENTSYS-AAAA NOTE: These requirements should be included in Section 2 of the ROP (for Blue Water Renewables, LLC) since they own and operate the Treatment System and associated RICE engines.	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUTREATMENTSYS
FGOPENFLARE-AAAA	Open (non-enclosed) flare is an open combustor without enclosure or shroud. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUOPENFLARE
FGVENTFLARE-AAAA	This flexible group contains 40 CFR Part 63, Subpart AAAA requirements as they pertain to a passive gas collection system. Self-igniting (solar powered) flares are open combustors and are not enclosed or shrouded.	EUVENTFLARE

**FGLANDFILL-AAAA
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

This flexible group represents the general MSW landfill with a required active and passive collection and control system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Emission Units: EULANDFILL, EUACTIVECOLL, EUTREATMENTSYS, EUOPENFLARE & EUVENTFLARE

POLLUTION CONTROL EQUIPMENT

Most of the landfill gas is collected and combusted in an open flare or combusted in the internal combustion engines to generate electricity.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Methane	Less than 500 ppm above background level	Calendar Quarter	Surface of Landfill	SC V.1 SC VI.1	40 CFR 63.1958(d)(1)

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. At all times, the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 63.1955(c))**
2. During periods of startup, shutdown, and malfunction (SSM), the permittee must comply with the work practices specified in 40 CFR 63.1958(e)(1). **(40 CFR 63.1960(e)(2))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee must install a collection and control system that captures the landfill gas generated within the landfill according to the requirements in 40 CFR 63.1959(b)(2)(ii) and 40 CFR 63.1959(b)(2)(iii). **(40 CFR 63.1959(b)(2))**
2. The permittee must route all the collected landfill gas to at least one of the following:
 - a. An open (non-enclosed) flare designed in accordance with 40 CFR 63.11(b) except as noted in 40 CFR 63.1959(e). **(40 CFR 63.1959(b)(2)(iii)(A))**
 - b. A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight-percent or reduce the outlet NMOC concentration to less than 20 ppmv on dry basis, as hexane at 3% oxygen. **(40 CFR 63.1959(b)(2)(iii)(B))**
 - c. A treatment system that processes the collected gas for subsequent sale or beneficial use. If the treated landfill gas cannot be routed for subsequent sale or beneficial use, then the treated landfill gas must be controlled according to either 40 CFR 63.1959(b)(2)(iii)(A) or (B). **(40 CFR 63.1959(b)(2)(iii)(C))**

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30-meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis. **(40 CFR 63.1960(c)(1))**
2. The permittee must conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at no more than 30-meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan must be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30-meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing. **(40 CFR 63.1958(d)(1))**
 - a. The permittee must conduct testing using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 40 CFR 63.1960(d). **(40 CFR 63.1958(d)(2)(i), 40 CFR 63.1960(c)(1))**
 - b. The background concentration must be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells. **(40 CFR 63.1960(c)(2))**
 - c. Surface emission monitoring must be performed in accordance with 40 CFR Part 60, Appendix A-7, Method 21, Section 8.3.1, except that the probe inlet must be placed within 5 to 10 centimeters of the ground. Monitoring must be performed during typical meteorological conditions. **(40 CFR 63.1960(c)(3))**
 - d. The permittee must conduct surface testing at all cover penetrations and monitor any cover penetrations that are within an area of the landfill where waste has been placed and a gas collection system is required. **(40 CFR 63.1958(d)(2)(ii))**
 - e. The permittee must determine the latitude and longitude coordinates of each exceedance using an instrument with an accuracy of at least 4 meters. The coordinates must be in decimal degrees with at least five decimal places. **(40 CFR 63.1958(d)(2)(iii))**
3. The permittee must document any reading of 500 ppm or more above background at any location as a monitored exceedance. As long as the following specified actions are taken, the exceedance is not a violation of the operational requirements of 40 CFR 63.1958(d). **(40 CFR 63.1960(c)(4))**
 - a. The location of each monitored exceedance must be marked, and the location recorded using an instrument with an accuracy of 4 meters with coordinates in decimal degrees and five decimal places. **(40 CFR 63.1960(c)(4)(i))**
 - b. Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance must be made and the location must be re-monitored within 10 calendar days of detecting the exceedance. **(40 CFR 63.1960(c)(4)(ii))**
 - c. If the re-monitoring of the location shows a second exceedance, additional corrective action must be taken and the location must be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in SC V.3.e must be taken, and no further monitoring of that location is required until the action specified in SC V.3.e has been taken. **(40 CFR 63.1960(c)(4)(iii))**
 - d. Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in 40 CFR 63.1960(c)(4)(ii) or (iii) must be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring shows a concentration less than 500 ppm above backgrounds, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in SC V.3.c or SC V.3.e must be taken. **(40 CFR 63.1960(c)(4)(iv))**

- e. For any location where monitored methane concentration equals or exceeds 500 ppm above backgrounds three times within a quarterly period, a new well or other collection device must be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the Department for approval. **(40 CFR 63.1960(c)(4)(v))**
4. The permittee must comply with instrumentation specifications and procedures in 40 CFR 63.1960(d) for surface emission monitoring devices: **(40 CFR 63.1960(d))**
 - a. The portable analyzer must meet the instrument specifications provided in 40 CFR Part 60, Appendix A-7, Method 21, except that "methane" must replace all references to VOC. **(40 CFR 63.1960(d)(1))**
 - b. The calibration gas must be methane, diluted to a nominal concentration of 500 ppm in air. **(40 CFR 63.1960(d)(2))**
 - c. To meet the performance evaluation requirements in 40 CFR Part 60, Appendix A-7, Method 21, the instrument evaluation procedures of 40 CFR Part 60, Appendix A-7, Method 21 must be used. **(40 CFR 63.1960(d)(3))**
 - d. The calibration procedures provided in 40 CFR Part 60, Appendix A-7, Method 21 must be followed immediately before commencing a surface monitoring survey. **(40 CFR 63.1960(d)(4))**
5. Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring. **(40 CFR 63.1961(f))**

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep records of the surface methane monitoring including, at a minimum, the following information:
 - a. The route traversed including any areas not monitored because of unsafe conditions (i.e., truck traffic, construction, active face, dangerous areas, etc.) and areas included where visual observations indicate elevated levels of landfill gas. **(40 CFR 63.1960(c)(1))**
 - b. The location(s) and concentrations of the methane readings and noting any reading of 500 ppm or more above background. **(40 CFR 63.1960(c)(4))**
 - c. The meteorological conditions the day of the testing including wind speed, wind direction, and temperature. **(R 336.1213(3))**

The permittee must keep all records on file in a format acceptable to the appropriate AQD District Supervisor and make them available upon request. **(R 336.1213(3), 40 CFR 63.1960(c))**

2. The permittee must implement a program to monitor, on a monthly basis, for cover integrity and implement cover repairs as necessary. Records of the cover integrity and any cover repairs must be kept on file in a format acceptable to the appropriate AQD District Supervisor and made available upon request. **(R 336.1213(3), 40 CFR 63.1960(c)(5))**
3. The permittee must keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report that triggered 40 CFR 63.1959(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable. The permittee must keep all records on file in a format acceptable to the appropriate AQD District Supervisor and make them available upon request. **(R 336.1213(3), 40 CFR 63.1983(a))**
4. If adding liquids other than leachate in a controlled fashion to the waste mass and do not comply with the bioreactor requirements in 40 CFR 63.1947, 40 CFR 63.1955(b), and 40 CFR 63.1982(a) and (b), the permittee must keep records of calculations showing that the percent moisture by weight expected in the waste mass to

which liquid is added is less than 40 percent. The calculation must consider the waste mass, moisture content of the incoming waste, mass of water added to the waste including leachate recirculation and other liquids addition and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balances calculations can be used. The permittee must document the calculations and the basis of any assumptions. Keep the record of the calculations until the permittee ceases liquids addition. **(40 CFR 63.1982(c))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee must submit reports which must be postmarked or received by the appropriate AQD District Office by March 15 for reporting period January 1 to December 31. The reports must include the location of each exceedance of the 500 ppm methane concentrations as provided in 40 CFR 63.1958(d) and the concentration recorded at each location for which an exceedance was recorded in the previous month. The reports must also include information on all deviations that occurred during the 6-month reporting period. **(40 CFR 63.1961(f), 40 CFR 63.1981(h)(5))**
5. The permittee of a controlled landfill must submit an equipment removal report to the Department 30 days prior to removal or cessation of operation of the control equipment. **(40 CFR 63.1981(g))**
 - a. The equipment removal report must contain all the following items:
 - i. A copy of the closure report submitted in accordance with 40 CFR 63.1981(f). **(40 CFR 63.1981(g)(1)(i))**
 - ii. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired, or information that demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flows. In the equipment removal report, the process unit(s) tested, the pollutant(s) tested, and the date that such performance test was conducted may be submitted in lieu of the performance test report if the report has been previously submitted to the USEPA's Central Data Exchange (CDX). **(40 CFR 63.1981(g)(1)(ii))**
 - iii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 Mg or greater of NMOC per year. If the NMOC emission rate reports have been previously submitted to the USEPA's CDX, a statement that the NMOC emission rate reports have been submitted electronically and the dates that the reports were submitted to the USEPA's CDX may be submitted in the equipment removal report in lieu of the NMOC emission rate reports. **(40 CFR 63.1981(g)(1)(iii))**
 - b. The Department may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 63.1957(b) have been met. **(40 CFR 63.1981(g)(2))**
6. The permittee of a controlled landfill must submit a closure report to the Department within 30 days of waste acceptance cessation. The Department may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Department, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 63.9(b). **(40 CFR 63.1981(f))**
7. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air>)

[emissions/electronic-reporting-tool-ert](#)). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(I)(1)(i))**

- b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(I)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The NMOC emission rate reports, semiannual reports, and bioreactor 40-percent moisture reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(I)(2))**
8. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENTS

1. If the permittee has submitted a design plan under 40 CFR 63.1981(d), the permittee must submit a revised design plan to the Department for approval as follows:
 - a. At least 90 days before expanding operations to an area not covered by the previously approved design plan. **(40 CFR 63.1981(e)(1))**
 - b. Prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted under 40 CFR 63.1981(d). **(40 CFR 63.1981(e)(2))**
2. The collection and control system may be capped, removed, or decommissioned if the following criteria are met:
 - a. The landfill is a closed landfill (as defined in 40 CFR 63.1990). A closure report must be submitted to the Department as provided in 40 CFR 63.1981(f). **(40 CFR 63.1957(b)(1))**
 - b. The gas collection and control system has been in operation a minimum of 15 years or the permittee demonstrates that the gas collection and control system will be unable to operate for 15 years due to declining gas flow. **(40 CFR 63.1957(b)(2))**
 - c. Following the procedures specified in 40 CFR 63.1959(c), the calculated NMOC gas produced by the landfill must be less than 50 Mg/yr on three successive test dates. The test dates must be no less than 90 days apart, and no more than 180 days apart. **(40 CFR 63.1957(b)(3))**
3. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

<p style="text-align: center;">FGACTIVECOLL-AAAA & FGPASSIVECOLL-AAAA FLEXIBLE GROUP CONDITIONS</p>
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DESCRIPTION

This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment. This group also includes the passive collection system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Emission Unit: EUACTIVECOLL & EUPASSIVECOLL

POLLUTION CONTROL EQUIPMENT

One (1) open flare and one self-igniting solar flare serving the active portion of the landfill and six (6) self-igniting solar flares serving the closed portion of the landfill. The solar flares were approved by the United States Environmental Protection Agency.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee must operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:
 - a. 5 years or more if active; or **(40 CFR 63.1958(a)(1))**
 - b. 2 years or more if closed or at final grade. **(40 CFR 63.1958(a)(2))**
2. The permittee must operate the collection system with negative pressure at each wellhead except under the following conditions:
 - a. A fire or increased well temperature. **(40 CFR 63.1958(b)(1))**
 - b. Use of a geo-membrane or synthetic cover. The permittee must develop acceptable pressure limits in the design plan. **(40 CFR 63.1958(b)(2))**
 - c. A decommissioned well. A well may experience a static positive pressure after shut-down to accommodate for declining flows. **(40 CFR 63.1958(b)(3))**
3. The permittee must operate each interior wellhead in the collection system under the following conditions:
 - a. Operate each interior wellhead in the collection system with a landfill gas temperature less than 62.8°C (145°F). **(40 CFR 63.1958(c)(1))**
 - b. A higher operating temperature value may be established at a particular well. A higher operating value demonstration must be submitted to the Department for approval and must include supporting data that the elevated parameter does not cause fires nor significantly inhibit anaerobic decomposition by killing methanogens. **(40 CFR 63.1958(c)(2))**

4. At all times, the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 63.1955(c))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. Except as described below, the permittee must operate the system in accordance with 40 CFR 63.1955(c) such that all collected gases are vented to a control system designed and operated in compliance with 40 CFR 63.1959(b)(2)(iii). **(40 CFR 63.1958(e)(1))**
 - a. In the event the collection or control system is not operating, the gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within 1 hour of the collection or control system not operating. **(40 CFR 63.1958(e)(1)(i))**
 - b. Efforts by the permittee to repair the collection or control system must be initiated and completed in a manner such that downtime is kept to a minimum, and the collection and control system must be returned to operation. **(40 CFR 63.1958(e)(1)(ii))**
 - c. For the passive gas collection system, as approved by U.S. EPA, the requirement to close valves within one hour in the event of control device malfunction is satisfied by following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 63.1958(e)(1), 40 CFR 63.1981(d)(6), 40 CFR 63.1955(a))**
 - d. For the passive gas collection system, as approved by U.S. EPA, the requirement to operate the vent flare at all times when the collected gas is routed to it is satisfied by the continuous ignition system and following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 63.1958(e)(1), 40 CFR 63.1981(d)(6), 40 CFR 63.1955(a))**
2. The permittee must install an active collection system that meets the following requirements:
 - a. Designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment. **(40 CFR 63.1959(b)(2)(ii)(B)(1))**
 - b. Each well must be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of 5 years or more if active; or 2 years or more if closed or at final grade. **(40 CFR 63.1960(b), 40 CFR 63.1959(b)(2)(ii)(B)(2))**
 - c. Collects gas at a sufficient extraction rate. **(40 CFR 63.1959(b)(2)(ii)(B)(3))**
 - d. Designed to minimize off-site migration of subsurface gas. **(40 CFR 63.1959(b)(2)(ii)(B)(4))**
3. The permittee must install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead. **(40 CFR 63.1961(a))**
4. The permittee must demonstrate compliance with the operational standard for temperature in 40 CFR 63.1958(c)(1) by monitoring the temperature of the landfill gas on a monthly basis as provided in 40 CFR 63.1960(a)(4). The temperature measuring device must be calibrated annually using the procedure in Section 10.3 of USEPA Method 2 of Appendix A-1 to Part 60 of this chapter. **(40 CFR 63.1961(a)(4))**
5. The permittee must site active gas collection devices as required in 40 CFR 63.1962 and must control all gas producing areas, except as provided below.
 - a. Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under 40 CFR 63.1983(d). **(40 CFR 63.1962(a)(3)(i))**
 - b. Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared

to the NMOC emissions estimate for the entire landfill. Emissions from each section must be computed using the equation in Appendix 7. **(40 CFR 63.1962(a)(3)(ii))**

6. A **passive** gas collection system shall comply with the following:
 - a. The provisions specified in 40 CFR 60.752(b)(2)(ii)(A)(1), (2), and (4). **(40 CFR 60.752(b)(2)(ii)(B)(1), 40 CFR 63.1955(a))**
 - b. The U.S. EPA Final Control Plan. **(40 CFR 60.752(b)(2)(i)(C), 40 CFR 63.1955(c), U.S. EPA approved Final Control Plan)**

See Appendix 7

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 40 CFR 63.1959(b)(2)(ii)(B)(3), the permittee must measure, on a monthly basis, the gauge pressure in the gas collection header at each individual well as provided in 40 CFR 63.1960(a)(3) and 40 CFR 63.1961(a)(1). Any attempted corrective measure must not cause exceedances of other operational or performance standards.
 - a. If positive pressure exists, action must be initiated to correct the exceedance within five calendar days. **(40 CFR 63.1960(a)(3)(i))**
 - c. If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement of positive pressure, the permittee must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after positive pressure was first measured. **(40 CFR 63.1960(a)(3)(i)(A))**
 - d. If corrective actions cannot be fully implemented within 60 days following the positive pressure measurement for which the root cause analysis was required, the permittee must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the positive pressure measurement. **(40 CFR 63.1960(a)(3)(i)(B))**
 - d. If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the permittee must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Department as soon as practicable but no later than 75 days after the first measurement of positive pressure or above, according to 40 CFR 63.1981(j). **(40 CFR 63.1960(a)(3)(i)(C))**
2. The permittee must monitor each well monthly for temperature for the purpose of identifying whether excess air infiltration exists as provided in 40 CFR 63.1958(c)(1) and 40 CFR 63.1961(a)(4). If a well exceeds the operating parameter for temperature, the following corrective actions must be taken:
 - a. Action must be initiated to correct the exceedance within 5 calendar days. Any attempted corrective measure must not cause exceedances of other operational or performance standards. **(40 CFR 63.1960(a)(4)(i))**
 - b. If a landfill gas temperature less than 62.8°C (145°F) cannot be achieved within 15 calendar days of the first measurement of landfill gas temperature greater than 62.8°C (145°F), the permittee must conduct a root cause analysis and correct the exceedance as soon as practicable, but no later than 60 days after a landfill gas temperature greater than 62.8°C (145°F) was first measured. **(40 CFR 63.1960(a)(4)(i)(A))**
 - c. If corrective actions cannot be fully implemented within 60 days following the temperature measurement for which the root cause analysis was required, the permittee must also conduct a corrective action analysis and develop an implementation schedule to complete the corrective action(s) as soon as practicable, but no more than 120 days following the measurement of landfill gas temperature greater than 62.8°C (145°F). **(40 CFR 63.1960(a)(4)(i)(B))**

- d. If corrective action is expected to take longer than 120 days to complete after the initial exceedance, the permittee must submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Department as soon as practicable but no later than 75 days after the first measurement of temperature monitoring value of 62.8°C (145°F) or above, according to 40 CFR 63.1981(h)(7) and 40 CFR 63.1981(j). **(40 CFR 63.1960(a)(4)(i)(C))**
- e. If a landfill gas temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7°C (170°F) and the carbon monoxide concentration measured according to the procedures in 40 CFR 63.1961(a)(5)(vi) is greater than or equal to 1,000 ppmv, the corrective action(s) for the wellhead temperature standard 62.8°C (145°F) must be completed within 15 days. **(40 CFR 63.1960(a)(4)(i)(D))**
3. The permittee must monitor, on a monthly basis, the nitrogen or oxygen concentration in the landfill gas using the procedures in 40 CFR 63.1961(a)(2)(i) or (ii). **(40 CFR 63.1961(a)(2))**
4. Unless a higher operating temperature value has been approved by the Department under this subpart or under 40 CFR Part 60, Subpart WWW; 40 CFR Part 60, Subpart XXX; or a federal plan or USEPA-approved and effective state plan that implements either 40 CFR Part 60, Subpart Cc or 40 CFR Part 60, Subpart Cf, the permittee must initiate enhanced monitoring at each well with a landfill gas temperature greater than 62.8°C (145°F) as follows:
 - a. Visual observations for subsurface oxidation events (smoke, smoldering ash, damage to well) within the radius of influence of the well. **(40 CFR 63.1961(a)(5)(i))**
 - b. Monitor the oxygen concentration as provided in SC VI.3. **(40 CFR 63.1961(a)(5)(ii))**
 - c. Monitor the temperature of the landfill gas at the wellhead as provided in SC VI.2. **(40 CFR 63.1961(a)(5)(iii))**
 - d. Monitor the landfill gas every 10 vertical feet of the well as provided in SC VI.5. **(40 CFR 63.1961(a)(5)(iv))**
 - e. Monitor the methane concentration with a methane meter using USEPA Method 3C of Appendix A-6 to 40 CFR Part 60, USEPA Method 18 of Appendix A-6 to 40 CFR Part 60, or a portable gas composition analyzer to monitor the methane levels provided that the analyzer is calibrated and the analyzer meets all quality assurance and quality control requirements for USEPA Method 3C or USEPA Method 18. **(40 CFR 63.1961(a)(5)(v))**
 - f. Monitor the carbon monoxide concentrations as follows:
 - i. Collect the sample from the wellhead sampling port in a passivated canister or multi-layer foil gas sampling bag (such as the Cali-5-Bond Bag) and analyze that sample using an approved USEPA Method listed in 40 CFR 60, Appendix A, or an equivalent method with a detection limit of at least 100 ppmv of carbon monoxide in high concentrations of methane; or. **(40 CFR 63.1961(a)(5)(vi)(A))**
 - ii. Collect and analyze the sample from the wellhead using an approved USEPA Method listed in 40 CFR 60, Appendix A to measure carbon monoxide concentrations. **(40 CFR 63.1961(a)(5)(vi)(B))**
 - iii. When sampling directly from the wellhead, sample for 5 minutes plus twice the response time of the analyzer. These values must be recorded. The five 1-minute averages are then averaged to give you the carbon monoxide reading at the wellhead. **(40 CFR 63.1961(a)(5)(vi)(C))**
 - iv. When collecting samples in a passivated canister or multi-layer foil sampling bag, sample for the period of time needed to assure that enough sample is collected to provide five (5) consecutive, 1-minute samples during the analysis of the canister or bag contents, but no less than 5 minutes plus twice the response time of the analyzer. The five (5) consecutive, 1-minute averages are then averaged together to give a carbon monoxide value from the wellhead. **(40 CFR 63.1961(a)(5)(vi)(D))**
 - g. The enhanced monitoring specified in SC VI.4 must begin seven calendar days after the first measurement of landfill gas temperature greater than 62.8°C (145°F). **(40 CFR 63.1961(a)(5)(vii))**
 - h. The enhanced monitoring must be conducted on a weekly basis. If four consecutive weekly carbon monoxide readings are under 100 ppmv, then enhanced monitoring may be decreased to monthly. However, if carbon monoxide readings exceed 100 ppmv again, the landfill must return to weekly monitoring. **(40 CFR 63.1961(a)(5)(viii))**
 - i. The enhanced monitoring specified in SC VI.4 can be stopped once a higher operating value is approved, at which time the monitoring provisions issued with the higher operating value should be followed, or once the

measurement of landfill gas temperature at the wellhead is less than or equal to 62.8°C (145°F). **(40 CFR 63.1961(a)(5)(ix))**

5. For each wellhead with a measurement of landfill gas temperature greater than or equal to 73.9°C (165°F), the permittee shall annually monitor temperature of the landfill gas every 10 vertical feet of the well. This temperature can be monitored either with a removable thermometer or using temporary or permanent thermocouples installed in the well. **(40 CFR 63.1961(a)(6))**
6. The permittee must keep, on a monthly basis, readily accessible records of the following:
 - a. All collection and control system exceedances of the operational standards in 40 CFR 63.1958, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance. **(40 CFR 63.1983(e)(1))**
 - b. The records of each wellhead temperature monitoring value of 62.8°C (145°F) or above. **(40 CFR 63.1983(e)(2)(i))**
 - c. Each permittee required to conduct the enhanced monitoring provisions in 40 CFR 63.1961(a)(5), must also keep records of all enhanced monitoring activities. **(40 CFR 63.1983(e)(2)(ii))**
 - d. The permittee must also keep a record of the email transmission when required to submit the 24-hour high temperature report in 40 CFR 63.1981(k). **(40 CFR 63.1983(e)(2)(iii))**
 - e. For any root cause analysis for which corrective actions are required in 40 CFR 63.1960(a)(3)(i)(A) or (a)(4)(i)(A), keep a record of the root cause analysis conducted, including a description of the recommended corrective action(s) taken, and the date(s) the corrective action(s) were completed. **(40 CFR 63.1983(e)(3))**
 - f. For any root cause analysis for which corrective actions are required in 40 CFR 63.1960(a)(3)(i)(B) or (a)(4)(i)(B), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates. **(40 CFR 63.1983(e)(4))**
 - g. For any root cause analysis for which corrective actions are required in 40 CFR 63.1960(a)(3)(i)(C) or (a)(4)(i)(C), keep a record of the root cause analysis conducted, the corrective action analysis, the date for corrective action(s) already completed following the positive pressure reading or high temperature reading, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates, and a copy of any comments or final approval on the corrective action analysis or schedule from the Department. **(40 CFR 63.1983(e)(5))**
7. The permittee must keep up-to-date, readily accessible records for the life of the control equipment of the data listed as follows:
 - a. The maximum expected gas generation flow rate as calculated in 40 CFR 63.1960(a)(1). **(40 CFR 63.1983(b)(1)(i))**
 - b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 63.1962(a)(1) and (2). **(40 CFR 63.1983(b)(1)(ii))**
8. The permittee must record the date, time, and duration of each startup and/or shutdown periods when the affected source was subject to the standard applicable to startup and shutdown. **(40 CFR 63.1983(c)(6))**
9. Where the permittee seeks to demonstrate compliance with the operational standard in 40 CFR 63.1958(e)(1), in the event that an affected unit fails to meet an applicable standard, the permittee shall record the following information:
 - a. The date, time, and duration of each failure and the cause of the events (including unknown cause, if applicable). **(40 CFR 63.1983(c)(7)(i))**
 - b. For each failure to meet an applicable standard; record and retain a list of the affected sources or equipment. **(40 CFR 63.1983(c)(7)(ii))**

- c. Record actions taken to minimize emissions in accordance with the general duty of 40 CFR 63.1955(c) and any corrective actions taken to return the affected unit to its normal or usual manner of operation. **(40 CFR 63.1983(c)(7)(iii))**
10. The permittee must keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector; and the installation date and location of all newly installed collectors as specified under 40 CFR 63.1960(b). **(40 CFR 63.1983(d), 40 CFR 63.1983(d)(1))**
11. The permittee must maintain the following information:
 - a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion. **(40 CFR 63.1981(i)(1))**
 - b. The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. **(40 CFR 63.1981(i)(3))**
 - c. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. **(40 CFR 63.1981(i)(4))**
 - d. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. **(40 CFR 63.1981(i)(5))**
 - e. The provisions for the control of off-site migration. **(40 CFR 63.1981(i)(6))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee using an active collection system designed in accordance with 40 CFR 63.1959(b)(2)(ii) must submit to the Department semiannual reports. The semiannual reports must include the following information:
 - a. Number of times the applicable parameters monitored under 40 CFR 63.1958(b), (c) and (d) were exceeded and when the gas collection and control system was not operating under 40 CFR 63.1958(e), including periods of SSM. For each instance, report the date, time, and duration of each exceedance. **(40 CFR 63.1981(h)(1))**
 - b. Where the permittee seeks to demonstrate compliance with the temperature and nitrogen or oxygen operational standards in introductory paragraph 40 CFR 63.1958(c), provide a statement of the wellhead operational standard for temperature and oxygen for the period covered by the report. Indicate the number of times each of those parameters monitored under 40 CFR 63.1961(a)(3) were exceeded. For each instance, report the date, time, and duration of each exceedance. **(40 CFR 63.1981(h)(1)(i))**
 - c. Where the permittee seeks to demonstrate compliance with the operational standard for temperature in 40 CFR 63.1958(c)(1), provide a statement of the wellhead operational standard for temperature and oxygen for the period covered by the report. Indicate the number of times each of those parameters monitored under 40 CFR 63.1961(a)(4) were exceeded. For each instance, report the date, time, and duration of each exceedance. **(40 CFR 63.1981(h)(1)(ii))**

- d. The date of installation and the location of each well or collection system expansion added pursuant to 40 CFR 63.1960(a)(3) and (a)(4), (b), and (c)(4). **(40 CFR 63.1981(h)(6))**
- e. The permittee must record instances when a positive pressure occurs in efforts to avoid fire. **(40 CFR 63.1958(b)(1))**
- f. Include any corrective action analysis for which corrective actions are required in 40 CFR 63.1960(a)(3)(i) or (a)(5) and that take more than 60 days to correct the exceedance, the root cause analysis conducted, including a description of the recommended corrective action(s), the date for corrective action(s) already completed following the positive pressure or high temperature reading, and, for action(s) not already completed, a schedule for implementation, including proposed commencement and completion dates. **(40 CFR 63.1981(h)(7))**
- g. Each permittee required to conduct enhanced monitoring in 40 CFR 63.1961(a)(5) and (6) must include the results of all monitoring activities conducted during the period; **(40 CFR 63.1981(h)(8))**
 - i. For each monitoring point, report the date, time, and well identifier along with the value and units of measure for oxygen, temperature (wellhead and downwell), methane, and carbon monoxide. **(40 CFR 63.1981(h)(8)(i))**
 - ii. Include a summary trend analysis for each well subject to the enhanced monitoring requirements to chart the weekly readings over time for oxygen, wellhead temperature, methane, and weekly or monthly readings over time, as applicable for carbon monoxide. **(40 CFR 63.1981(h)(8)(ii))**
 - iii. Include the date, time, staff person name, and description of findings for each visual observation for subsurface oxidation event. **(40 CFR 63.1981(h)(8)(iii))**
5. The permittee must submit information regarding corrective actions as follows:
 - a. For corrective action that is required according to 40 CFR 63.1960(a)(3) or (a)(4) and is not completed within 60 days after the initial exceedance, submit a notification to the Department as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature exceedance. **(40 CFR 63.1981(j)(1))**
 - b. For corrective action that is required according to 40 CFR 63.1960(a)(3) or (4) and is expected to take longer than 120 days after the initial exceedance to complete, submit the root cause analysis, corrective action analysis, and corresponding implementation timeline to the Department as soon as practicable but no later than 75 days after the first measurement of positive pressure or temperature monitoring value of 62.8°C (145°F) or above. The Department must approve the plan for corrective action and the corresponding timeline. **(40 CFR 63.1981(j)(2))**
6. Where the permittee seeks to demonstrate compliance with the operational standard for temperature in 40 CFR 63.1958(c)(1) and a landfill gas temperature measured at either the wellhead or at any point in the well is greater than or equal to 76.7°C (170°F) and the carbon monoxide concentration measured is greater than or equal to 1,000 ppmv, report the date, time, well identifier, temperature and carbon monoxide reading via email to the Department within 24 hours of the measurement unless a higher operating temperature value has been approved by the Department for the well under this subpart or under 40 CFR Part 60, Subpart WWW; 40 CFR Part 60, Subpart XXX; or a Federal plan or USEPA approved and effective state plan that implements either 40 CFR Part 60, Subpart Cc or 40 CFR Part 60, Subpart Cf. **(40 CFR 63.1981(k))**
7. Beginning no later than September 27, 2021, the permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(l)(1)(i))**

- b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(I)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The semiannual reports and bioreactor 40-percent moisture reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(I)(2))**
8. The permittee shall submit all monitoring activities and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENTS

1. Each permittee seeking to demonstrate compliance with 40 CFR 63.1959(b)(2)(ii)(B)(4) through the use of a collection system not conforming to the specifications provided in 40 CFR 63.1962 must provide information satisfactory to the Department as specified in 40 CFR 63.1981(c)(3) demonstrating that off-site migration is being controlled. **(40 CFR 63.1960(a)(5))**
2. Each permittee seeking to install a collection system that does not meet the specifications in 40 CFR 63.1962 or is seeking to monitor alternative parameters to those required by 40 CFR 63.1958 through 40 CFR 63.1961 must provide information satisfactory to the Department as provided in 40 CFR 63.1981(d)(2) and (3) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The Department may specify additional appropriate monitoring procedures. **(40 CFR 63.1961(e))**
3. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

**FGTREATMENTSYS-AAAA
FLEXIBLE GROUP CONDITIONS**

NOTE: These requirements should be included in Section 2 of the ROP (for Blue Water Renewables, LLC) since they own and operate the Treatment System and associated RICE engines.

DESCRIPTION

A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Emission Unit: EUTREATMENTSYS

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatment system subject to 40 CFR 63.1959(b)(2)(iii)(A) or (B).

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate the treatment system at all times when the collected gas is routed to the treatment system. **(40 CFR 63.1958(f))**
2. The permittee must operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system must comply with 40 CFR 63.1959(b)(2)(iii)(A) or (B). **(40 CFR 63.1959(b)(2)(iii)(C) and (D))**
3. The permittee must develop a site-specific treatment system monitoring plan as required in 40 CFR 63.1983(b)(5)(ii). The plan must at a minimum contain the following: **(40 CFR 63.1961(g))**
 - a. Monitoring of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. **(40 CFR 63.1983(b)(5)(ii)(A))**
 - b. Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas. **(40 CFR 63.1983(b)(5)(ii)(B))**
 - c. Documentation of the monitoring methods and ranges, along with justification for their use. **(40 CFR 63.1983(b)(5)(ii)(C))**
 - d. List of responsible staff (by job title) for data collection. **(40 CFR 63.1983(b)(5)(ii)(D))**
 - e. Processes and methods used to collect the necessary data. **(40 CFR 63.1983(b)(5)(ii)(E))**
 - f. Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems (CMS). **(40 CFR 63.1983(b)(5)(ii)(F))**
4. The monitoring requirements apply at all times the treatment system is operating except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities. The permittee must complete monitoring system repairs in

response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable. **(40 CFR 63.1961(h))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee must install and properly operate a treatment system in accordance with 40 CFR 63.1981(d)(2). **(40 CFR 63.1961(d))**
2. The permittee must install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; and secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. **(40 CFR 63.1961(g))**

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep monthly records of all treatment system operating parameters specified to be monitored according to 40 CFR 63.1961. The records must include:
 - a. Continuous records of the indication of flow and gas flow rate to the treatment system. **(40 CFR 63.1983(c)(2))**
 - b. The indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines. **(40 CFR 63.1983(c)(2))**
 - c. Maintenance and repair of the monitoring system. **(40 CFR 63.1961(h))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee must submit to the appropriate AQD District Office semiannual reports for the landfill gas treatment system. The reports must be received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. The reports must include the following:
 - a. The number of times the parameters for the treatment system under 40 CFR 63.1961(g) were exceeded. **(40 CFR 63.1981(h)(1)(iii))**
 - b. Description and duration of all periods when the gas stream is diverted from the treatment system through a bypass line or the indication of bypass flow. **(40 CFR 63.1981(h)(2))**
 - c. Description and duration of all periods when the treatment system was not operating and length of time the treatment system was not operating. **(40 CFR 63.1981(h)(3))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool

(ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(I)(1)(i))**

- b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(I)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The semiannual reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(I)(2))**
6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

- 1. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**FGOPENFLARE-AAAA & FGVENTFLARE-AAAA
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Open (non-enclosed) flare is an open combustor without enclosure or shroud. Seven (7) self-igniting solar flares. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Emission Unit: EUOPENFLARE & EUVENTFLARE

POLLUTION CONTROL EQUIPMENT

Open (non-enclosed) flare & seven (7) self-igniting solar flares

I. EMISSION LIMIT(S)

1. There must be no visible emissions from EUOPENFLARE and EUVENTFLARE except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. **(40 CFR 63.11(b)(4))**

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate EUOPENFLARE at all times when the collected gas is routed to it. **(40 CFR 63.11(b)(3), 40 CFR 63.1958(f))** For EUVENTFLARE, as approved by U.S. EPA, the requirement to operate the vent flare at all times when the collected gas is routed to it is satisfied by the continuous ignition system and following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 63.1958(e)(1), 40 CFR 63.1981(d)(6), 40 CFR 63.1955(a))**
2. The flare must be operated with a flame present at all times. **(40 CFR 63.11(b)(5))**
3. In the event the control system is inoperable, the gas mover system must be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere must be closed within one hour. **(40 CFR 63.1958(e)(1)(i))** For the passive gas collection system, as approved by U.S. EPA, the requirement to close valves within one hour in the event of control device malfunction is satisfied by following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 63.1958(e)(1), 40 CFR 63.1981(d)(6), 40 CFR 63.1955(a))**
4. In the event the control system is inoperable, efforts to repair the collection system must be initiated and completed in a manner such that downtime is kept to a minimum, and the collection and control system must be returned to operation. **(40 CFR 63.1958(e)(1)(ii))**
5. At all times, the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 63.1955(c))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee must design and operate EUOPENFLARE and EUVENTFLARE in accordance with the parameters established in 40 CFR 63.11(b). **(40 CFR 63.1959(b)(2)(iii)(A))**

Spell Out Date {e.g. JANUARY 01, 2022} - WORKING DRAFT

ROP No: MI-ROP--

Expiration Date:

PTI No: MI-PTI--

2. The permittee must install, calibrate, maintain, and operate according to the manufacturer's specifications, a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. **(40 CFR 63.11(b)(5), 40 CFR 63.1961(c)(1))**
3. For EUOPENFLARE, the permittee must install, calibrate, maintain, and operate according to the manufacturer's specifications, a device that records flow to or bypass of the flare (if applicable) at least every 15 minutes. **(40 CFR 63.1961(c)(2))**

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within 180 days of permit issuance, the permittee must verify visible emissions, the net heating value, and exit velocity from EUOPENFLARE and at a minimum, every five years from the date of the last test, thereafter. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**
2. The permittee must notify the appropriate AQD District Supervisor not less than 30 days before testing of the time and place performance tests will be conducted. **(R 336.1213(3))**

See Appendix 7

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For EUOPENFLARE, the permittee must maintain records regarding the flare type (i.e., steam-assisted, air-assisted, or non-assisted), 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 63.11. **(40 CFR 63.1983(b)(4))**
2. For EUOPENFLARE, the permittee must keep monthly records of the operating parameters specified to be monitored in 40 CFR 63.1961(c). The records must include:
 - a. Continuous records of the indication of flow and gas flow rate to the control device. **(40 CFR 63.1983(b)(4))**
 - b. The indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines. **(40 CFR 63.1961(c)(2)(ii))**
 - c. Continuous records of the open flare pilot flame or open flare flame monitoring, and records of all periods of operations during which the pilot flame of the flare flame is absent. **(40 CFR 63.1983(b)(4))**
3. For EUVENTFLARE, weekly inspections of spark plug performance of the non-assisted flares shall be completed and records shall be kept onsite. In the event of a spark plug failure, the permittee has five days to correct the malfunction. If the malfunction cannot be corrected within five days, a deviation will be reported during semiannual NESHAP report.
4. For EUVENTFLARE, the permittee shall perform the following monitoring on a monthly basis: **(40 CFR 63.1959(a)(2)(ii)(A), 40 CFR 63.1955(a))**
 - a. Downloading of the data collected by the data logger.
 - b. Visual inspection of each flare to verify that components of the flare have not become damaged by weather conditions or vandalism.

See Appendix 7

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee must submit to the appropriate AQD District Office semiannual reports for the control system. Reports must be received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. For flares, reportable exceedances are defined under 40 CFR 63.1961(c). The reports must include the following:
 - a. 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. **(40 CFR 63.1981(h)(2))**
 - b. Description and duration of all periods when the control device was not operating and length of time the control device was not operating. **(40 CFR 63.1981(h)(3))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(I)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(I)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The semiannual reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(I)(2))**
6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO ₂ e	Carbon Dioxide Equivalent
CEMS	Continuous Emission Monitoring System	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
Department/ department	Michigan Department of Environment, Great Lakes, and Energy	gr	Grains
EGLE	Michigan Department of Environment, Great Lakes, and Energy	HAP	Hazardous Air Pollutant
EU	Emission Unit	Hg	Mercury
FG	Flexible Group	hr	Hour
GACS	Gallons of Applied Coating Solids	HP	Horsepower
GC	General Condition	H ₂ S	Hydrogen Sulfide
GHGs	Greenhouse Gases	kW	Kilowatt
HVLP	High Volume Low Pressure*	lb	Pound
ID	Identification	m	Meter
IRSL	Initial Risk Screening Level	mg	Milligram
ITSL	Initial Threshold Screening Level	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	NMOC	Non-methane Organic Compounds
MAP	Malfunction Abatement Plan	NO _x	Oxides of Nitrogen
MSDS	Material Safety Data Sheet	ng	Nanogram
NA	Not Applicable	PM	Particulate Matter
NAAQS	National Ambient Air Quality Standards	PM10	Particulate Matter equal to or less than 10 microns in diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	%	Percent
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SDS	Safety Data Sheet	TAC	Toxic Air Contaminant
SNCR	Selective Non-Catalytic Reduction	Temp	Temperature
SRN	State Registration Number	THC	Total Hydrocarbons
TEQ	Toxicity Equivalence Quotient	tpy	Tons per year
USEPA/EPA	United States Environmental Protection Agency	µg	Microgram
VE	Visible Emissions	µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee must continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 1 (Smiths Creek). Therefore, this appendix is not applicable.

Appendix 7. Emission Calculations

The permittee must use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in **FGACTIVECOLL-AAAA** and **FGOPENFLARE-AAAA** for 40 CFR Part 63, Subpart AAAA.

Calculation used to determine NMOC emissions from any nonproductive area

The following must be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Department upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. (40 CFR 63.1962(a)(3)(ii))

The NMOC emissions from each section proposed for exclusion must be computed using Equation 7 (40 CFR 63.1962(a)(3)(ii)(A)):

$$Q_i = 2 k L_o M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

Where:

Q_i = NMOC emission rate from the ith section, Mg/yr

k = methane generation rate constant, year⁻¹

L_o = methane generation potential, m³/Mg solid waste

M_i = mass of the degradable solid waste in the ith section, Mg

t_i = age of the solid waste in the ith section, years

C_{NMOC} = concentration of non-methane organic compounds, ppmv

3.6×10^{-9} = conversion factor

If the permittee is proposing to exclude, or cease gas collection and control from, nonproductive physically separated (e.g., separately lined) closed areas that already have gas collection systems, NMOC emissions from each physically separated closed area must be computed using either Equation 3 in 40 CFR 63.1959(c) or Equation 7 in 40 CFR 63.1962(a)(3)(ii)(A). **(40 CFR 63.1962(a)(3)(ii)(B))**

The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, L_o and C_{NMOC} provided in 40 CFR 63.1959(a)(1) or the alternative values from 40 CFR 63.1959(a)(5) must be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 63.1962(a)(3)(i). **(40 CFR 63.1962(a)(3)(iii))**

Net Heating Value of the gas being combusted in the flare:

The permittee has the choice of adhering to the heat content specifications in 40 CFR 63.11(b)(6)(ii) (equations below), and the maximum tip velocity specifications in 40 CFR 63.11(b)(7) or (b)(8), or adhering to the requirements in 40 CFR 63.11(b)(6)(i). **(40 CFR 63.11(b)(6))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of off gas is based on combustion at 25°C and 760 mmHg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = Constant (1.740 \times 10^{-7}) \left(\frac{1}{ppm} \right) \left(\frac{g \text{ mole}}{scm} \right) \left(\frac{MJ}{kcal} \right)$$

Where the standard temperature for $\left(\frac{g \text{ mole}}{scm} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 63.14); and

H_i = Net heat of combustion of sample component i, kcal/g mole at 25°C and 760 mmHg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 (incorporated by reference as specified in 40 CFR 63.14) if published values are not available or cannot be calculated.

Calculation for Vmax steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 63.11(b)(7)(i) must be calculated and recorded using the equation provided in 40 CFR 63.18(b)(7)(iii). **(40 CFR 63.18(b)(7)(iii))**

$$\text{Log}_{10} (V_{max}) = (H_T + 28.8)/31.7$$

Where:

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in 63.11(b)(6).

Calculation for Vmax for air-assisted flares

The maximum permitted velocity, V_{max} , for air-assisted flares must be calculated and recorded using the equation provided in 40 CFR 63.11(b)(8). **(40 CFR 63.11(b)(8))**

$$V_{max} = 8.71 + 0.708 (H_T)$$

Where:

V_{max} = Maximum permitted velocity, m/sec

8.71 = Constant

0.708 = Constant

H_T = The net heating value as determined in 63.11(b)(6)(ii).

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee must use EGLE, AQD, Report Certification form (EQP 5736) and EGLE, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, emission unit and/or flexible group special conditions. Therefore, Part B of this appendix is not applicable.

C. Other Reporting - Calculations

Permit No. 163-09D APPENDIX A Procedures for Calculating Emissions

The permittee shall demonstrate compliance with the emission limits in this permit by vendor data, stack testing, and/or gas testing.

Vendor Data or Stack Testing:

The permittee shall use emission factors from vendor data or from source specific testing (if stack test data is available, use most recent stack test data), as available for each emission unit included in FGFACILITY. The permittee shall use emission factors contained in the most recent AP-42 (Compilation of Air Pollutant Emission Factors) or the most recent FIRE (Factor Information Retrieval) database if vendor or stack testing data is not available. If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions. The permittee shall document the source of each emission factor used in the calculations.

Calculation for Monthly SO₂ Emissions:

The following calculation for SO₂ emissions shall utilize the monthly average of the weekly (or daily, if required) H₂S concentration measurements from test data collected, the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test.

SO2 Emissions (tons per month)

$$\begin{aligned}
 &= \frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} \times \frac{1.1733 \text{ mols Sulfur}}{\text{ft}^3} \times \frac{34.08 \text{ grams}}{\text{mol Sulfur}} \times \frac{\text{pound}}{453.59 \text{ grams}} \\
 &\times \frac{1 \text{ ton}}{2,000 \text{ pounds}} \times \frac{1.88 \text{ SO}_2}{\text{H}_2\text{S}} \text{Molecular Weight Ratio} \times \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} \times \text{Monthly Landfill Gas Usage (ft}^3\text{/month)}
 \end{aligned}$$

Smiths Creek Landfill
Landfill Gas and NMOC Emissions Combined from Two Model Runs

Year	LFG Flow SM 1 cfm	LFG Flow SM 2 cfm	LFG Flow Combined cfm	NMOC Ems SM 1 Mg/year	NMOC Ems SM 2 Mg/year	NMOC Ems Combined Mg/year
1967	0		0	0		0.00
1968	5.822E+01		58	2.466E+00		2.47
1969	1.142E+02		114	4.838E+00		4.84
1970	1.679E+02		168	7.114E+00		7.11
1971	2.196E+02		220	9.301E+00		9.30
1972	2.692E+02		269	1.140E+01		11.40
1973	3.170E+02		317	1.343E+01		13.43
1974	3.627E+02		363	1.537E+01		15.37
1975	4.067E+02		407	1.723E+01		17.23
1976	4.491E+02		449	1.902E+01		19.02
1977	4.895E+02		490	2.074E+01		20.74
1978	5.289E+02		529	2.240E+01		22.40
1979	5.667E+02		567	2.400E+01		24.00
1980	6.026E+02		603	2.552E+01		25.52
1981	6.370E+02		637	2.698E+01		26.98
1982	6.706E+02		671	2.841E+01		28.41
1983	7.024E+02		702	2.975E+01		29.75
1984	7.329E+02		733	3.104E+01		31.04
1985	7.627E+02		763	3.231E+01		32.31
1986	7.909E+02		791	3.350E+01		33.50
1987	8.180E+02		818	3.465E+01		34.65
1988	8.444E+02		844	3.577E+01		35.77
1989	8.694E+02		869	3.683E+01		36.83
1990	8.934E+02		893	3.784E+01		37.84
1991	8.855E+02		886	3.751E+01		37.51
1992	8.885E+02		888	3.763E+01		37.63
1993	8.910E+02		891	3.774E+01		37.74
1994	8.913E+02		891	3.775E+01		37.75
1995	8.966E+02		897	3.798E+01		37.98
1996	9.116E+02		912	3.861E+01		38.61
1997	9.229E+02		923	3.909E+01		39.09
1998	9.209E+02		921	3.901E+01		39.01
1999	9.453E+02		945	4.004E+01		40.04
2000	9.855E+02		985	4.174E+01		41.74
2001	1.021E+03		1,021	4.326E+01		43.26
2002	1.053E+03		1,053	4.461E+01		44.61
2003	1.074E+03		1,074	4.548E+01		45.48
2004	1.096E+03		1,096	4.641E+01		46.41
2005	1.120E+03		1,120	4.745E+01		47.45
2006	1.180E+03		1,180	4.999E+01		49.99
2007	1.200E+03		1,200	5.083E+01		50.83
2008	1.260E+03	0	1,260	5.335E+01	0	53.35
2009	1.210E+03	1.687E+02	1,379	5.126E+01	7.148E+00	58.41
2010	1.163E+03	3.080E+02	1,471	4.925E+01	1.305E+01	62.29
2011	1.117E+03	4.419E+02	1,559	4.732E+01	1.872E+01	66.04
2012	1.073E+03	5.966E+02	1,670	4.546E+01	2.527E+01	70.73
2013	1.031E+03	7.163E+02	1,748	4.368E+01	3.034E+01	74.02
2014	9.908E+02	8.314E+02	1,822	4.197E+01	3.522E+01	77.18
2015	9.519E+02	9.713E+02	1,923	4.032E+01	4.114E+01	81.46
2016	9.146E+02	1.179E+03	2,093	3.874E+01	4.993E+01	88.67
2017	8.787E+02	1.356E+03	2,235	3.722E+01	5.744E+01	94.67
2018	8.443E+02	1.603E+03	2,447	3.576E+01	6.789E+01	103.65
2019	8.112E+02	1.786E+03	2,597	3.436E+01	7.565E+01	110.01

Year	LFG Flow SM 1 cfm	LFG Flow SM 2 cfm	LFG Flow Combined cfm	NMOC Ems SM 1 Mg/year	NMOC Ems SM 2 Mg/year	NMOC Ems Combined Mg/year
2020	7.794E+02	1.934E+03	2,714	3.301E+01	8.193E+01	114.95
2021	7.488E+02	2.001E+03	2,750	3.172E+01	8.475E+01	116.47
2022	7.195E+02	2.097E+03	2,817	3.047E+01	8.883E+01	119.31
2023	6.912E+02	2.266E+03	2,957	2.928E+01	9.598E+01	125.26
2024	6.641E+02	2.422E+03	3,086	2.813E+01	1.026E+02	130.72
2025	6.381E+02	2.566E+03	3,204	2.703E+01	1.087E+02	135.71
2026	6.131E+02	2.698E+03	3,312	2.597E+01	1.143E+02	140.27
2027	5.890E+02	2.821E+03	3,410	2.495E+01	1.195E+02	144.45
2028	5.659E+02	2.934E+03	3,500	2.397E+01	1.243E+02	148.26
2029	5.438E+02	3.039E+03	3,582	2.303E+01	1.287E+02	151.75
2030	5.224E+02	3.135E+03	3,658	2.213E+01	1.328E+02	154.93
2031	5.019E+02	3.224E+03	3,726	2.126E+01	1.366E+02	157.83
2032	4.823E+02	3.306E+03	3,789	2.043E+01	1.400E+02	160.48
2033	4.634E+02	3.382E+03	3,845	1.963E+01	1.433E+02	162.89
2034	4.452E+02	3.452E+03	3,897	1.886E+01	1.462E+02	165.08
2035	4.277E+02	3.517E+03	3,944	1.812E+01	1.490E+02	167.08
2036	4.110E+02	3.576E+03	3,987	1.741E+01	1.515E+02	168.90
2037	3.948E+02	3.632E+03	4,026	1.673E+01	1.538E+02	170.55
2038	3.794E+02	3.682E+03	4,062	1.607E+01	1.560E+02	172.05
2039	3.645E+02	3.729E+03	4,094	1.544E+01	1.580E+02	173.41
2040	3.502E+02	3.773E+03	4,123	1.483E+01	1.598E+02	174.64
2041	3.365E+02	3.813E+03	4,149	1.425E+01	1.615E+02	175.75
2042	3.233E+02	3.850E+03	4,173	1.369E+01	1.631E+02	176.75
2043	3.106E+02	3.884E+03	4,194	1.316E+01	1.645E+02	177.66
2044	2.984E+02	3.915E+03	4,214	1.264E+01	1.658E+02	178.48
2045	2.867E+02	3.944E+03	4,231	1.214E+01	1.671E+02	179.21
2046	2.755E+02	3.971E+03	4,246	1.167E+01	1.682E+02	179.87
2047	2.647E+02	3.996E+03	4,260	1.121E+01	1.693E+02	180.46
2048	2.543E+02	4.019E+03	4,273	1.077E+01	1.702E+02	180.99
2049	2.443E+02	4.040E+03	4,284	1.035E+01	1.711E+02	181.46
2050	2.347E+02	4.059E+03	4,294	9.943E+00	1.719E+02	181.88
2051	2.255E+02	4.077E+03	4,303	9.553E+00	1.727E+02	182.25
2052	2.167E+02	4.094E+03	4,310	9.179E+00	1.734E+02	182.58
2053	2.082E+02	4.109E+03	4,317	8.819E+00	1.741E+02	182.87
2054	2.000E+02	4.123E+03	4,323	8.473E+00	1.746E+02	183.12
2055	1.922E+02	4.136E+03	4,328	8.141E+00	1.752E+02	183.34
2056	1.847E+02	4.148E+03	4,333	7.822E+00	1.757E+02	183.53
2057	1.774E+02	4.159E+03	4,337	7.515E+00	1.762E+02	183.70
2058	1.705E+02	4.170E+03	4,340	7.220E+00	1.766E+02	183.84
2059	1.638E+02	4.179E+03	4,343	6.937E+00	1.770E+02	183.96
2060	1.574E+02	4.188E+03	4,345	6.665E+00	1.774E+02	184.06
2061	1.512E+02	4.196E+03	4,347	6.404E+00	1.777E+02	184.14
2062	1.453E+02	4.203E+03	4,349	6.153E+00	1.780E+02	184.20
2063	1.396E+02	4.210E+03	4,350	5.912E+00	1.783E+02	184.25
2064	1.341E+02	3.887E+03	4,021	5.680E+00	1.646E+02	170.31
2065	1.288E+02	3.588E+03	3,717	5.457E+00	1.520E+02	157.43

Maximum Fugitive NMOC Emissions:

184.25 Mg X
year

25% X

1.1 tons =
Mg

50.67 tons NMOC
year

INTRODUCTION

LandGEM - Landfill Gas Emissions Model, Version 3.03

U.S. Environmental Protection Agency

Model Design:

Worksheet Name	Function
<u>INTRO</u>	Contains an overview of the model and important notes about using LandGEM
<u>USER INPUTS</u>	Allows users to provide landfill characteristics, determine model parameters, select up to four gases/pollutants (total landfill gas, methane, carbon dioxide, NMOC, and 46 air pollutants), and enter waste acceptance rates
<u>POLLUTANTS</u>	Allows users to edit air pollutant concentrations and molecular weights for existing pollutants and add up to 10 new pollutants
<u>INPUT REVIEW</u>	Allows users to review and print model inputs
<u>METHANE</u>	Calculates methane emission estimates using the first-order decomposition rate equation
<u>RESULTS</u>	Shows tabular emission estimates for up to four gases/pollutants (selected in the USER INPUTS worksheet) in megagrams per year, cubic meters per year, and user's choice of a third unit of measure (average cubic feet per minute, cubic feet per year, or short tons per year)
<u>GRAPHS</u>	Shows graphical emission estimates for up to four gases/pollutants (selected in the USER INPUTS worksheet) in megagrams per year, cubic meters per year, and user's choice of a third unit of measure (selected in the RESULTS worksheet)
<u>INVENTORY</u>	Displays tabular emission estimates for all gases/pollutants for a single year specified by users
<u>REPORT</u>	Allows users to review and print model inputs and outputs in a summary report

IMPORTANT NOTES!

The following user inputs MUST be completed in the USER INPUTS worksheet:

- Landfill open year
- Landfill closure year or Waste design capacity
- Annual waste acceptance rates from open year to current year or closure year

Other Important Notes:

- LandGEM is based on the gas generated from anaerobic decomposition of landfilled waste which has a methane content between 40 and 60 percent.
- When using LandGEM to comply with the CAA, the methane content of the landfill gas must remain fixed at 50% by volume (the model default value).
- Default pollutant concentrations used by LandGEM have already been corrected for air infiltration, as stated in AP-42. If a user-specified value for NMOC concentration is used based on site-specific data, then it must be corrected for air infiltration.
- When comparing results from LandGEM with measurements of extracted gas collected at a site, the landfill owner/operator must adjust for air infiltration prior to any comparisons.
- One megagram is equivalent to one metric ton.

About LandGEM:

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

USER INPUTS

Landfill Name or Identifier:

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	<input type="text" value="2008"/>	
Landfill Closure Year	<input type="text" value="2062"/>	
Have Model Calculate Closure Year?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Waste Design Capacity	<input type="text"/>	<input type="text" value="megagrams"/> ▼

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (year⁻¹)	User-specified k value should be based on site-specific data and determined by EPA Method 2E.	
<input type="text" value="User-specified"/> ▼	User-specified value:	<input type="text" value="0.080"/>
Potential Methane Generation Capacity, L₀ (m³/Mg)		
<input type="text" value="Inventory Conventional - 100"/> ▼		
NMOC Concentration (ppmv as hexane)		
<input type="text" value="User-specified"/> ▼	User-specified value:	<input type="text" value="794"/>
Methane Content (% by volume)		
<input type="text" value="CAA - 50% by volume"/> ▼		

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1	<input type="text" value="Total landfill gas"/> ▼	<p>Default pollutant parameters are currently being used by model.</p> <p>Edit Existing or Add New Pollutant Parameters</p> <p>Restore Default Pollutant Parameters</p>
Gas / Pollutant #2	<input type="text" value="Methane"/> ▼	
Gas / Pollutant #3	<input type="text" value="Carbon dioxide"/> ▼	
Gas / Pollutant #4	<input type="text" value="NMOC"/> ▼	

Description/Comments:

4: ENTER WASTE ACCEPTANCE RATES

Input Units: ▼

Year	Input Units (short tons/year)	Calculated Units (Mg/year)
2008	178,940	162,673
2009	161,401	146,728
2010	167,119	151,926
2011	200,107	181,915
2012	175,573	159,612
2013	180,453	164,048
2014	216,105	196,459
2015	299,172	271,975
2016	284,269	258,426
2017	371,971	338,155
2018	325,103	295,548
2019	302,821	275,292
2020	228,311	207,556
2021	265,272	241,156
2022	350,000	318,182
2023	350,000	318,182
2024	350,000	318,182
2025	350,000	318,182
2026	350,000	318,182
2027	350,000	318,182
2028	350,000	318,182
2029	350,000	318,182
2030	350,000	318,182
2031	350,000	318,182
2032	350,000	318,182
2033	350,000	318,182
2034	350,000	318,182
2035	350,000	318,182
2036	350,000	318,182
2037	350,000	318,182
2038	350,000	318,182
2039	350,000	318,182
2040	350,000	318,182
2041	350,000	318,182
2042	350,000	318,182
2043	350,000	318,182
2044	350,000	318,182
2045	350,000	318,182
2046	350,000	318,182
2047	350,000	318,182

4: ENTER WASTE ACCEPTANCE RATES

Input Units: ▼

Year	Input Units (short tons/year)	Calculated Units (Mg/year)
2048	350,000	318,182
2049	350,000	318,182
2050	350,000	318,182
2051	350,000	318,182
2052	350,000	318,182
2053	350,000	318,182
2054	350,000	318,182
2055	350,000	318,182
2056	350,000	318,182
2057	350,000	318,182
2058	350,000	318,182
2059	350,000	318,182
2060	350,000	318,182
2061	350,000	318,182
2062	350,000	318,182
2063		
2064		
2065		
2066		
2067		
2068		
2069		
2070		
2071		
2072		
2073		
2074		
2075		
2076		
2077		
2078		
2079		
2080		
2081		
2082		
2083		
2084		
2085		
2086		
2087		

POLLUTANTS

Landfill Name or Identifier: Smiths Creek ROP Renewal Bioreactor

Enter New Pollutant Parameters

Edit Existing Pollutant Parameters

Default parameters will be used by model unless alternate parameters are entered.

Enter User-specified Pollutant Parameters for Existing Pollutants:

Gas / Pollutant Default Parameters:

	Compound	Concentration (ppmv)	Molecular Weight	Notes	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		30.03			
	Methane		16.04			
	Carbon dioxide		44.01			
	NMOC	794	86.18			
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41	A		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85	A, B		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97	A, B		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94	A, B		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96	A, B		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99	A, B		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11	B		
	Acetone	7.0	58.08			
	Acrylonitrile - HAP/VOC	6.3	53.06	A, B		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11	A, B		
	Benzene - Co-disposal - HAP/VOC	11	78.11	A, B		
	Bromodichloromethane - VOC	3.1	163.83	B		
	Butane - VOC	5.0	58.12	B		
	Carbon disulfide - HAP/VOC	0.58	76.13	A, B		
	Carbon monoxide	140	28.01			
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84	A, B		
	Carbonyl sulfide - HAP/VOC	0.49	60.07	A, B		
	Chlorobenzene - HAP/VOC	0.25	112.56	A, B		
	Chlorodifluoromethane	1.3	86.47			
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52	A, B		
	Chloroform - HAP/VOC	0.03	119.39	A, B		
	Chloromethane - VOC	1.2	50.49	B		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147	B, C		
	Dichlorodifluoromethane	16	120.91			
	Dichlorofluoromethane - VOC	2.6	102.92	B		
	Dichloromethane (methylene chloride) - HAP	14	84.94	A		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13	B		
	Ethane	890	30.07			
	Ethanol - VOC	27	46.08	B		
	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13	B		
	Ethylbenzene - HAP/VOC	4.6	106.16	A, B		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88	A, B		
	Fluorotrichloromethane - VOC	0.76	137.38	B		
	Hexane - HAP/VOC	6.6	86.18	A, B		
	Hydrogen sulfide	36	34.08			
	Mercury (total) - HAP	2.9E-04	200.61	A		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11	A, B		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16	A, B		
	Methyl mercaptan - VOC	2.5	48.11	B		
	Pentane - VOC	3.3	72.15	B		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83	A		
	Propane - VOC	11	44.09	B		
t-1,2-Dichloroethene - VOC	2.8	96.94	B			
Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13	A, B			
Toluene - Co-disposal - HAP/VOC	170	92.13	A, B			
Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40	A, B			
Vinyl chloride - HAP/VOC	7.3	62.50	A, B			
Xylenes - HAP/VOC	12	106.16	A, B			

Enter New Compound	Enter Concentration (ppmv)	Enter Molecular Weight

**Return to
USER INPUTS**

- A. Hazardous air pollutants (HAP) listed in Title III of the 1990 Clean Air Act Amendments.
- B. Considered volatile organic compounds (VOC), as defined by U.S. EPA in 40 CFR 51.100(s).
- C. Source tests did not indicate whether this compound was the para- or ortho- isomer. The para-isomer is a Title III-listed HAP.

Source: Tables 2.4-1 and 2.4-2 of *Compilation of Air Pollutant Emission Factors, AP-42, Volume 1: Stationary Point and Area Sources*, 5th ed., Chapter 2.4 Municipal Solid Waste Landfills. U.S. EPA, Office of Air Quality Planning and Standards. Research Triangle Park, NC. November 1998. <http://www.epa.gov/ttn/chief/ap42/ch02/final/c02s04.pdf>

WASTE ACCEPTANCE RATES

Year	(Mg/year)	(short tons/year)
2008	162,673	178,940
2009	146,728	161,401
2010	151,926	167,119
2011	181,915	200,107
2012	159,612	175,573
2013	164,048	180,453
2014	196,459	216,105
2015	271,975	299,172
2016	258,426	284,269
2017	338,155	371,971
2018	295,548	325,103
2019	275,292	302,821
2020	207,556	228,311
2021	241,156	265,272
2022	318,182	350,000
2023	318,182	350,000
2024	318,182	350,000
2025	318,182	350,000
2026	318,182	350,000
2027	318,182	350,000
2028	318,182	350,000
2029	318,182	350,000
2030	318,182	350,000
2031	318,182	350,000
2032	318,182	350,000
2033	318,182	350,000
2034	318,182	350,000
2035	318,182	350,000
2036	318,182	350,000
2037	318,182	350,000
2038	318,182	350,000
2039	318,182	350,000
2040	318,182	350,000
2041	318,182	350,000
2042	318,182	350,000
2043	318,182	350,000
2044	318,182	350,000
2045	318,182	350,000
2046	318,182	350,000
2047	318,182	350,000
2048	318,182	350,000

WASTE ACCEPTANCE RATES

Year	(Mg/year)	(short tons/year)
2049	318,182	350,000
2050	318,182	350,000
2051	318,182	350,000
2052	318,182	350,000
2053	318,182	350,000
2054	318,182	350,000
2055	318,182	350,000
2056	318,182	350,000
2057	318,182	350,000
2058	318,182	350,000
2059	318,182	350,000
2060	318,182	350,000
2061	318,182	350,000
2062	318,182	350,000
2063	0	0
2064	0	0
2065	0	0
2066	0	0
2067	0	0
2068	0	0
2069	0	0
2070	0	0
2071	0	0
2072	0	0
2073	0	0
2074	0	0
2075	0	0
2076	0	0
2077	0	0
2078	0	0
2079	0	0
2080	0	0
2081	0	0
2082	0	0
2083	0	0
2084	0	0
2085	0	0
2086	0	0
2087	0	0

METHANE

Landfill Name or Identifier: Smiths Creek ROP Renewal Bioreactor

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 kL_0 \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)

M_i = mass of waste accepted in the i^{th} year (Mg)

i = 1-year time increment

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

Model Parameters from User Inputs:

L_0 = potential methane generation capacity (m^3/Mg)

$k = 0.080 \text{ year}^{-1}$
 $L_0 = 100 \text{ m}^3/Mg$

When Model Calculates Closure Year...

Final Non-Zero Acceptance Entered =	318,182 megagrams in	2062
Waste Design Capacity =	megagrams	
Closure Year (with 80-year limit) =	2062	
Actual Closure Year (without limit) =	2062	
Model Waste Acceptance Limit =	80 years	

Year	User Waste Acceptance Inputs (Mg/year)	User Waste-In Place (Mg)	Waste Acceptance (Mg/year)	Waste-In-Place (Mg)
2008	162,673	0	162,673	0
2009	146,728	162,673	146,728	162,673
2010	151,926	309,401	151,926	309,401
2011	181,915	461,327	181,915	461,327
2012	159,612	643,243	159,612	643,243
2013	164,048	802,855	164,048	802,855
2014	196,459	966,903	196,459	966,903
2015	271,975	1,163,362	271,975	1,163,362
2016	258,426	1,435,336	258,426	1,435,336
2017	338,155	1,693,763	338,155	1,693,763
2018	295,548	2,031,918	295,548	2,031,918
2019	275,292	2,327,466	275,292	2,327,466
2020	207,556	2,602,758	207,556	2,602,758
2021	241,156	2,810,314	241,156	2,810,314
2022	318,182	3,051,470	318,182	3,051,470
2023	318,182	3,369,652	318,182	3,369,652
2024	318,182	3,687,834	318,182	3,687,834
2025	318,182	4,006,016	318,182	4,006,016
2026	318,182	4,324,198	318,182	4,324,198
2027	318,182	4,642,379	318,182	4,642,379
2028	318,182	4,960,561	318,182	4,960,561
2029	318,182	5,278,743	318,182	5,278,743
2030	318,182	5,596,925	318,182	5,596,925
2031	318,182	5,915,107	318,182	5,915,107
2032	318,182	6,233,289	318,182	6,233,289
2033	318,182	6,551,470	318,182	6,551,470
2034	318,182	6,869,652	318,182	6,869,652
2035	318,182	7,187,834	318,182	7,187,834
2036	318,182	7,506,016	318,182	7,506,016
2037	318,182	7,824,198	318,182	7,824,198
2038	318,182	8,142,379	318,182	8,142,379
2039	318,182	8,460,561	318,182	8,460,561
2040	318,182	8,778,743	318,182	8,778,743
2041	318,182	9,096,925	318,182	9,096,925
2042	318,182	9,415,107	318,182	9,415,107
2043	318,182	9,733,289	318,182	9,733,289
2044	318,182	10,051,470	318,182	10,051,470
2045	318,182	10,369,652	318,182	10,369,652
2046	318,182	10,687,834	318,182	10,687,834
2047	318,182	11,006,016	318,182	11,006,016
2048	318,182	11,324,198	318,182	11,324,198
2049	318,182	11,642,379	318,182	11,642,379
2050	318,182	11,960,561	318,182	11,960,561
2051	318,182	12,278,743	318,182	12,278,743
2052	318,182	12,596,925	318,182	12,596,925
2053	318,182	12,915,107	318,182	12,915,107
2054	318,182	13,233,289	318,182	13,233,289
2055	318,182	13,551,470	318,182	13,551,470
2056	318,182	13,869,652	318,182	13,869,652
2057	318,182	14,187,834	318,182	14,187,834
2058	318,182	14,506,016	318,182	14,506,016
2059	318,182	14,824,198	318,182	14,824,198
2060	318,182	15,142,379	318,182	15,142,379
2061	318,182	15,460,561	318,182	15,460,561
2062	318,182	15,778,743	318,182	15,778,743
2063	0	16,096,925	0	16,096,925
2064	0	16,096,925	0	16,096,925
2065	0	16,096,925	0	16,096,925
2066	0	16,096,925	0	16,096,925
2067	0	16,096,925	0	16,096,925

Year	User Waste Acceptance Inputs (Mg/year)	User Waste-In-Place (Mg)	Waste Acceptance (Mg/year)	Waste-In-Place (Mg)
2068	0	16,096,925	0	16,096,925
2069	0	16,096,925	0	16,096,925
2070	0	16,096,925	0	16,096,925
2071	0	16,096,925	0	16,096,925
2072	0	16,096,925	0	16,096,925
2073	0	16,096,925	0	16,096,925
2074	0	16,096,925	0	16,096,925
2075	0	16,096,925	0	16,096,925
2076	0	16,096,925	0	16,096,925
2077	0	16,096,925	0	16,096,925
2078	0	16,096,925	0	16,096,925
2079	0	16,096,925	0	16,096,925
2080	0	16,096,925	0	16,096,925
2081	0	16,096,925	0	16,096,925
2082	0	16,096,925	0	16,096,925
2083	0	16,096,925	0	16,096,925
2084	0	16,096,925	0	16,096,925
2085	0	16,096,925	0	16,096,925
2086	0	16,096,925	0	16,096,925
2087	0	16,096,925	0	16,096,925

RESULTS

Landfill Name or Identifier: Smiths Creek ROP Renewal Bioreactor

Closure Year (with 80-year limit) = 2062
Methane = 50 % by volume

Please choose a third unit of measure to represent all of the emission rates below.

User-specified Unit: av ft³/3min

Table with columns: Year, Waste Accepted (Mg/year, short tons/year), Waste-in-Place (Mg, short tons), Total landfill gas (Mg/year, m³/year, av ft³/3min), Methane (Mg/year, m³/year, av ft³/3min), Carbon dioxide (Mg/year, m³/year, av ft³/3min), and NMOC (Mg/year, m³/year, av ft³/3min). Rows range from 2008 to 2086.

RESULTS

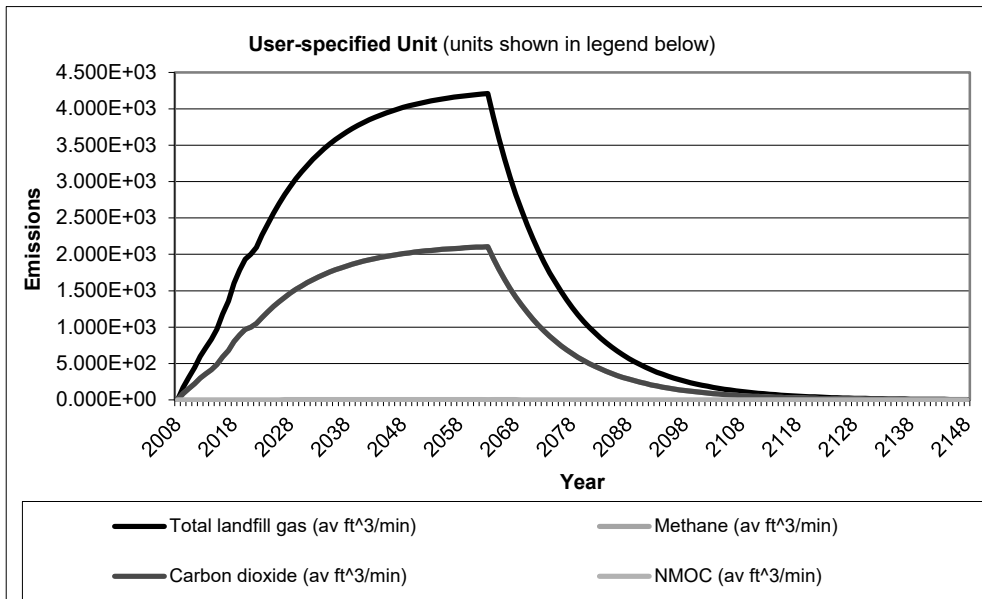
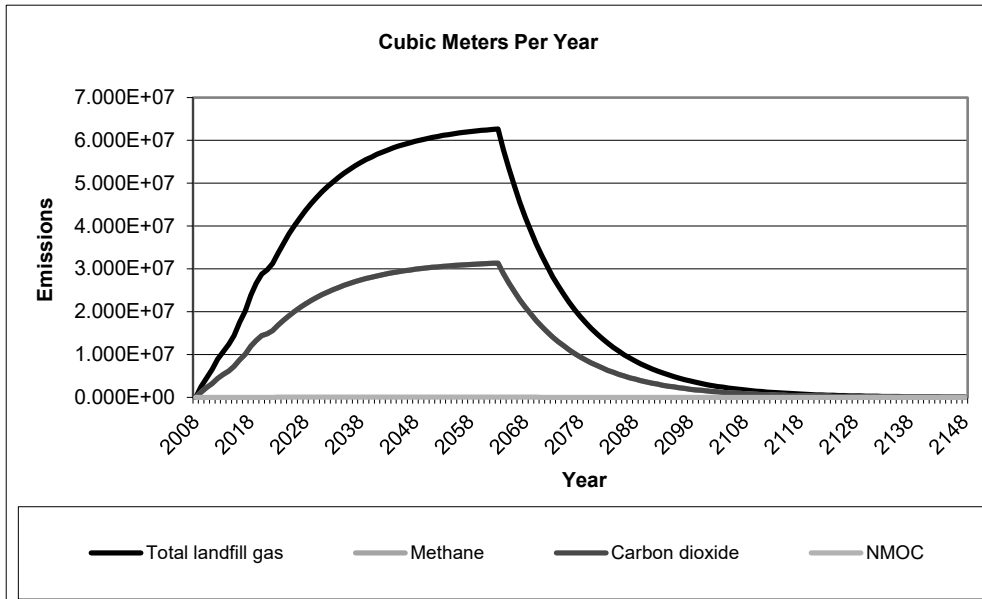
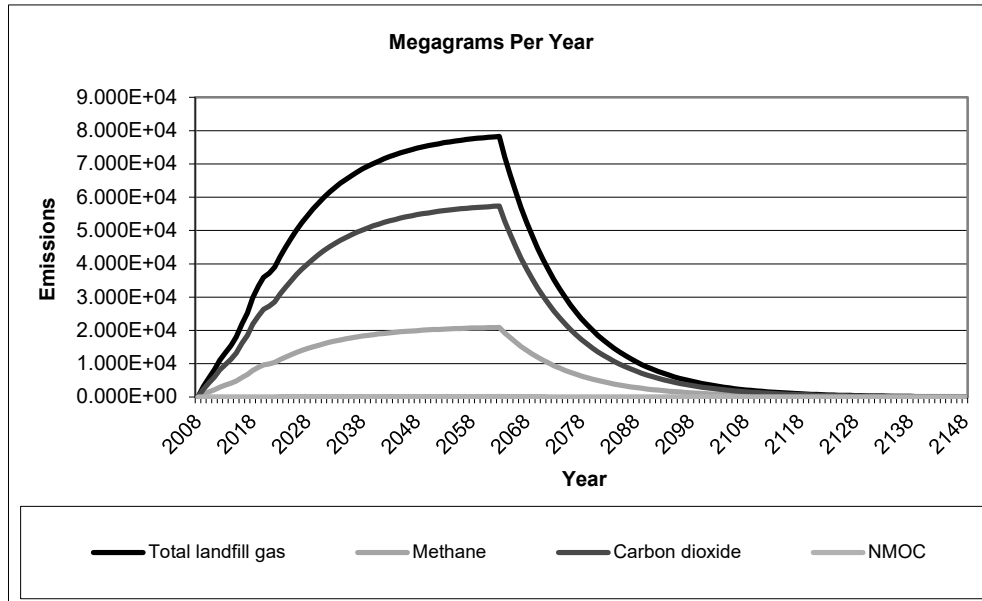
Landfill Name or Identifier: Smiths Creek ROP Renewal Bioreactor

Closure Year (with 80-year limit) = 2062
 Methane = 50 % by volume
 Please choose a third unit of measure to represent all of the emission rates below.
 User-specified Unit: av ft³/min

Year	Waste Accepted		Waste-in-Place		Total landfill gas			Methane			Carbon dioxide			NMOC		
	(Mg/year)	(short tons/year)	(Mg)	(short tons)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2087	0	0	16,096.925	17,706.617	1.147E+04	9.187E+06	6.172E+02	3.064E+03	4.593E+06	3.086E+02	8.408E+03	4.593E+06	3.086E+02	2.615E+01	7.294E+03	4.901E-01
2088	0	0	16,096.925	17,706.617	1.059E+04	8.480E+06	5.698E+02	2.829E+03	4.240E+06	2.849E+02	7.762E+03	4.240E+06	2.849E+02	2.414E+01	6.733E+03	4.524E-01
2089	0	0	16,096.925	17,706.617	9.776E+03	7.828E+06	5.260E+02	2.611E+03	3.914E+06	2.630E+02	7.165E+03	3.914E+06	2.630E+02	2.228E+01	6.216E+03	4.176E-01
2090	0	0	16,096.925	17,706.617	9.025E+03	7.226E+06	4.855E+02	2.411E+03	3.613E+06	2.428E+02	6.614E+03	3.613E+06	2.428E+02	2.057E+01	5.738E+03	3.855E-01
2091	0	0	16,096.925	17,706.617	8.331E+03	6.671E+06	4.482E+02	2.225E+03	3.335E+06	2.241E+02	6.106E+03	3.335E+06	2.241E+02	1.899E+01	5.297E+03	3.559E-01
2092	0	0	16,096.925	17,706.617	7.690E+03	6.158E+06	4.138E+02	2.054E+03	3.079E+06	2.069E+02	5.636E+03	3.079E+06	2.069E+02	1.753E+01	4.889E+03	3.285E-01
2093	0	0	16,096.925	17,706.617	7.099E+03	5.685E+06	3.819E+02	1.896E+03	2.842E+06	1.910E+02	5.203E+03	2.842E+06	1.910E+02	1.618E+01	4.514E+03	3.033E-01
2094	0	0	16,096.925	17,706.617	6.553E+03	5.247E+06	3.526E+02	1.750E+03	2.624E+06	1.763E+02	4.803E+03	2.624E+06	1.763E+02	1.493E+01	4.167E+03	2.799E-01
2095	0	0	16,096.925	17,706.617	6.049E+03	4.844E+06	3.255E+02	1.616E+03	2.422E+06	1.627E+02	4.434E+03	2.422E+06	1.627E+02	1.379E+01	3.846E+03	2.584E-01
2096	0	0	16,096.925	17,706.617	5.584E+03	4.472E+06	3.004E+02	1.492E+03	2.236E+06	1.502E+02	4.093E+03	2.236E+06	1.502E+02	1.273E+01	3.550E+03	2.386E-01
2097	0	0	16,096.925	17,706.617	5.155E+03	4.128E+06	2.773E+02	1.377E+03	2.064E+06	1.387E+02	3.778E+03	2.064E+06	1.387E+02	1.175E+01	3.277E+03	2.202E-01
2098	0	0	16,096.925	17,706.617	4.759E+03	3.810E+06	2.560E+02	1.271E+03	1.905E+06	1.280E+02	3.488E+03	1.905E+06	1.280E+02	1.084E+01	3.026E+03	2.033E-01
2099	0	0	16,096.925	17,706.617	4.393E+03	3.517E+06	2.363E+02	1.173E+03	1.759E+06	1.182E+02	3.219E+03	1.759E+06	1.182E+02	1.001E+01	2.793E+03	1.877E-01
2100	0	0	16,096.925	17,706.617	4.055E+03	3.247E+06	2.182E+02	1.083E+03	1.624E+06	1.091E+02	2.972E+03	1.624E+06	1.091E+02	9.241E+00	2.578E+03	1.732E-01
2101	0	0	16,096.925	17,706.617	3.743E+03	2.997E+06	2.014E+02	9.999E+02	1.499E+06	1.007E+02	2.743E+03	1.499E+06	1.007E+02	8.531E+00	2.380E+03	1.599E-01
2102	0	0	16,096.925	17,706.617	3.455E+03	2.767E+06	1.859E+02	9.230E+02	1.383E+06	9.296E+01	2.532E+03	1.383E+06	9.296E+01	7.875E+00	2.197E+03	1.476E-01
2103	0	0	16,096.925	17,706.617	3.190E+03	2.554E+06	1.716E+02	8.520E+02	1.277E+06	8.581E+01	2.338E+03	1.277E+06	8.581E+01	7.269E+00	2.028E+03	1.363E-01
2104	0	0	16,096.925	17,706.617	2.945E+03	2.358E+06	1.584E+02	7.865E+02	1.179E+06	7.921E+01	2.158E+03	1.179E+06	7.921E+01	6.711E+00	1.872E+03	1.258E-01
2105	0	0	16,096.925	17,706.617	2.718E+03	2.177E+06	1.462E+02	7.260E+02	1.088E+06	7.312E+01	1.992E+03	1.088E+06	7.312E+01	6.121E+00	1.728E+03	1.161E-01
2106	0	0	16,096.925	17,706.617	2.509E+03	2.009E+06	1.350E+02	6.702E+02	1.005E+06	6.760E+01	1.839E+03	1.005E+06	6.760E+01	5.718E+00	1.595E+03	1.072E-01
2107	0	0	16,096.925	17,706.617	2.316E+03	1.855E+06	1.246E+02	6.187E+02	9.274E+05	6.231E+01	1.698E+03	9.274E+05	6.231E+01	5.271E+00	1.473E+03	9.895E-02
2108	0	0	16,096.925	17,706.617	2.138E+03	1.712E+06	1.150E+02	5.711E+02	8.561E+05	5.752E+01	1.567E+03	8.561E+05	5.752E+01	4.873E+00	1.359E+03	9.134E-02
2109	0	0	16,096.925	17,706.617	1.974E+03	1.581E+06	1.062E+02	5.272E+02	7.903E+05	5.310E+01	1.447E+03	7.903E+05	5.310E+01	4.498E+00	1.255E+03	8.432E-02
2110	0	0	16,096.925	17,706.617	1.822E+03	1.459E+06	9.803E+01	4.867E+02	7.295E+05	4.901E+01	1.335E+03	7.295E+05	4.901E+01	4.152E+00	1.158E+03	7.784E-02
2111	0	0	16,096.925	17,706.617	1.682E+03	1.347E+06	9.049E+01	4.493E+02	6.734E+05	4.525E+01	1.233E+03	6.734E+05	4.525E+01	3.833E+00	1.069E+03	7.185E-02
2112	0	0	16,096.925	17,706.617	1.553E+03	1.243E+06	8.354E+01	4.147E+02	6.216E+05	4.177E+01	1.138E+03	6.216E+05	4.177E+01	3.538E+00	9.872E+02	6.633E-02
2113	0	0	16,096.925	17,706.617	1.433E+03	1.148E+06	7.711E+01	3.828E+02	5.738E+05	3.856E+01	1.050E+03	5.738E+05	3.856E+01	3.266E+00	9.113E+02	6.123E-02
2114	0	0	16,096.925	17,706.617	1.323E+03	1.059E+06	7.118E+01	3.534E+02	5.297E+05	3.559E+01	9.697E+02	5.297E+05	3.559E+01	3.015E+00	8.412E+02	5.652E-02
2115	0	0	16,096.925	17,706.617	1.221E+03	9.780E+05	6.571E+01	3.262E+02	4.890E+05	3.286E+01	8.951E+02	4.890E+05	3.286E+01	2.785E+00	7.765E+02	5.217E-02
2116	0	0	16,096.925	17,706.617	1.127E+03	9.028E+05	6.066E+01	3.012E+02	4.514E+05	3.033E+01	8.263E+02	4.514E+05	3.033E+01	2.569E+00	7.168E+02	4.816E-02
2117	0	0	16,096.925	17,706.617	1.041E+03	8.334E+05	5.600E+01	2.780E+02	4.167E+05	2.800E+01	7.628E+02	4.167E+05	2.800E+01	2.372E+00	6.617E+02	4.446E-02
2118	0	0	16,096.925	17,706.617	9.607E+02	7.693E+05	5.169E+01	2.566E+02	3.847E+05	2.585E+01	7.041E+02	3.847E+05	2.585E+01	2.190E+00	6.108E+02	4.104E-02
2119	0	0	16,096.925	17,706.617	8.869E+02	7.102E+05	4.772E+01	2.369E+02	3.551E+05	2.386E+01	6.500E+02	3.551E+05	2.386E+01	2.021E+00	5.639E+02	3.789E-02
2120	0	0	16,096.925	17,706.617	8.187E+02	6.566E+05	4.405E+01	2.187E+02	3.278E+05	2.202E+01	6.000E+02	3.278E+05	2.202E+01	1.866E+00	5.205E+02	3.497E-02
2121	0	0	16,096.925	17,706.617	7.557E+02	6.052E+05	4.066E+01	2.019E+02	3.026E+05	2.033E+01	5.539E+02	3.026E+05	2.033E+01	1.722E+00	4.805E+02	3.228E-02
2122	0	0	16,096.925	17,706.617	6.976E+02	5.586E+05	3.753E+01	1.863E+02	2.793E+05	1.877E+01	5.113E+02	2.793E+05	1.877E+01	1.590E+00	4.436E+02	2.980E-02
2123	0	0	16,096.925	17,706.617	6.440E+02	5.157E+05	3.465E+01	1.720E+02	2.578E+05	1.732E+01	4.720E+02	2.578E+05	1.732E+01	1.468E+00	4.095E+02	2.751E-02
2124	0	0	16,096.925	17,706.617	5.945E+02	4.760E+05	3.199E+01	1.588E+02	2.380E+05	1.599E+01	4.357E+02	2.380E+05	1.599E+01	1.355E+00	3.780E+02	2.540E-02
2125	0	0	16,096.925	17,706.617	5.488E+02	4.394E+05	2.953E+01	1.466E+02	2.197E+05	1.476E+01	4.022E+02	2.197E+05	1.476E+01	1.251E+00	3.489E+02	2.344E-02
2126	0	0	16,096.925	17,706.617	5.066E+02	4.057E+05	2.728E+01	1.353E+02	2.028E+05	1.363E+01	3.713E+02	2.028E+05	1.363E+01	1.155E+00	3.221E+02	2.164E-02
2127	0	0	16,096.925	17,706.617	4.676E+02	3.745E+05	2.516E+01	1.249E+02	1.872E+05	1.258E+01	3.427E+02	1.872E+05	1.258E+01	1.066E+00	2.973E+02	1.998E-02
2128	0	0	16,096.925	17,706.617	4.317E+02	3.457E+05	2.323E+01	1.153E+02	1.728E+05	1.161E+01	3.164E+02	1.728E+05	1.161E+01	9.838E-01	2.745E+02	1.844E-02
2129	0	0	16,096.925	17,706.617	3.985E+02	3.191E+05	2.144E+01	1.064E+02	1.595E+05	1.072E+01	2.921E+02	1.595E+05	1.072E+01	9.082E-01	2.534E+02	1.702E-02
2130	0	0	16,096.925	17,706.617	3.679E+02	2.946E+05	1.979E+01	9.826E+01	1.473E+05	9.896E+00	2.696E+02	1.473E+05	9.896E+00	8.384E-01	2.339E+02	1.571E-02
2131	0	0	16,096.925	17,706.617	3.396E+02	2.719E+05	1.827E+01	9.071E+01	1.360E+05	9.135E+00	2.489E+02	1.360E+05	9.135E+00	7.739E-01	2.159E+02	1.451E-02
2132	0	0	16,096.925	17,706.617	3.135E+02	2.510E+05	1.687E+01	8.373E+01	1.255E+05	8.433E+00	2.297E+02	1.255E+05	8.433E+00	7.144E-01	1.993E+02	1.339E-02
2133	0	0	16,096.925	17,706.617	2.894E+02	2.317E+05	1.557E+01	7.729E+01	1.159E+05	7.784E+00	2.121E+02	1.159E+05	7.784E+00	6.595E-01	1.840E+02	1.236E-02
2134	0	0	16,096.925	17,706.617	2.671E+02	2.139E+05	1.437E+01	7.135E+01	1.069E+05	7.186E+00	1.958E+02	1.069E+05	7.186E+00	6.088E-01	1.698E+02	1.141E-02
2135	0	0	16,096.925	17,706.617	2.466E+02	1.975E+05	1.327E+01	6.587E+01	9.873E+04	6.633E+00	1.807E+02	9.873E+04	6.633E+00	5.620E-01	1.568E+02	1.053E-02
2136	0	0	16,096.925	17,706.617	2.276E+02	1.823E+05	1.225E+01	6.080E+01	9.114E+04	6.123E+00	1.668E+02	9.114E+04	6.123E+00	5.188E-01	1.447E+02	9.724E-03
2137	0	0	16,096.925	17,706.617	2.101E+02	1.683E+05	1.131E+01	5.613E+01	8.413E+04	5.653E+00	1.540E+02	8.413E+04	5.653E+00	4.789E-01	1.336E+02	8.976E-03
2138	0	0	16,096.925	17,706.617	1.940E+02	1.553E+05	1.044E+01	5.181E+01	7.766E+04	5.218E+00	1.422E+02	7.766E+04	5.218E+00	4.421E-01	1.233E+02	8.286E-03
2139	0	0	16,096.925	17,706.617	1.791E+02	1.434E+05	9.634E+00	4.783E+01	7.1							

GRAPHS

Landfill Name or Identifier: Smiths Creek ROP Renewal Bioreactor

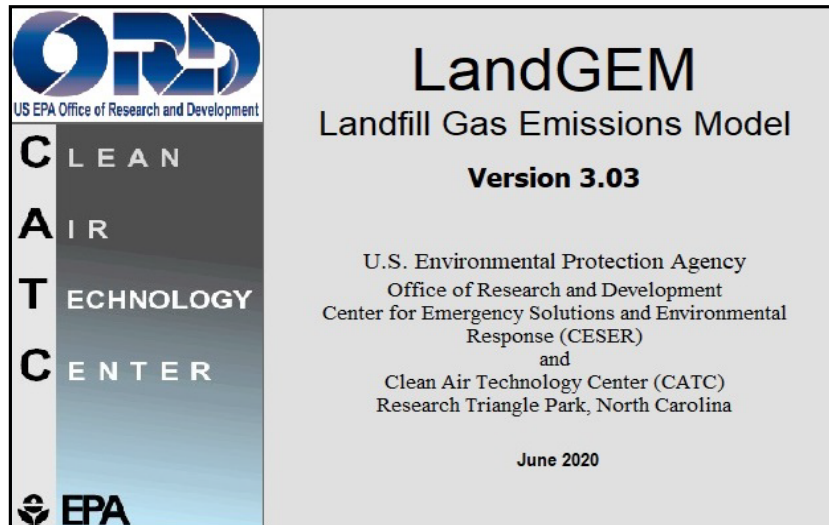


INVENTORY

Landfill Name or Identifier: Smiths Creek ROP Renewal Bioreactor

Enter year of emissions inventory:

Gas / Pollutant	Emission Rate				
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(ft ³ /year)	(short tons/year)
Total landfill gas	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Methane	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Carbon dioxide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NMOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1,1,1-Trichloroethane (methyl chloroform) - HAP	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1,1,2,2-Tetrachloroethane - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2-Propanol (isopropyl alcohol) - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Acetone	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Acrylonitrile - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Benzene - No or Unknown Co-disposal - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Benzene - Co-disposal - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bromodichloromethane - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Butane - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Carbon disulfide - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Carbon monoxide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Carbon tetrachloride - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Carbonyl sulfide - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Chlorobenzene - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Chlorodifluoromethane	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Chloroethane (ethyl chloride) - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Chloroform - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Chloromethane - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Dichlorobenzene - (HAP for para isomer/VOC)	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Dichlorodifluoromethane	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Dichlorofluoromethane - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Dichloromethane (methylene chloride) - HAP	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Dimethyl sulfide (methyl sulfide) - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ethane	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ethanol - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ethyl mercaptan (ethanethiol) - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ethylbenzene - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ethylene dibromide - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Fluorotrichloromethane - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Hexane - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Hydrogen sulfide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Mercury (total) - HAP	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Methyl ethyl ketone - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Methyl isobutyl ketone - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Methyl mercaptan - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pentane - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Perchloroethylene (tetrachloroethylene) - HAP	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Propane - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
t-1,2-Dichloroethene - VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Toluene - No or Unknown Co-disposal - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Toluene - Co-disposal - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Trichloroethylene (trichloroethene) - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Vinyl chloride - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Xylenes - HAP/VOC	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00



Summary Report

Landfill Name or Identifier: Smiths Creek ROP Renewal Bioreactor

Date: Wednesday, November 16, 2022

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:
$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 kL_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year **2008**
 Landfill Closure Year (with 80-year limit) **2062**
 Actual Closure Year (without limit) **2062**
 Have Model Calculate Closure Year? **No**
 Waste Design Capacity *megagrams*

MODEL PARAMETERS

Methane Generation Rate, k **0.080** *year⁻¹*
 Potential Methane Generation Capacity, L₀ **100** *m³/Mg*
 NMOC Concentration **794** *ppmv as hexane*
 Methane Content **50** *% by volume*

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1: **Total landfill gas**
 Gas / Pollutant #2: **Methane**
 Gas / Pollutant #3: **Carbon dioxide**
 Gas / Pollutant #4: **NMOC**

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2008	162,673	178,940	0	0
2009	146,728	161,401	162,673	178,940
2010	151,926	167,119	309,401	340,341
2011	181,915	200,107	461,327	507,460
2012	159,612	175,573	643,243	707,567
2013	164,048	180,453	802,855	883,140
2014	196,459	216,105	966,903	1,063,593
2015	271,975	299,172	1,163,362	1,279,698
2016	258,426	284,269	1,435,336	1,578,870
2017	338,155	371,971	1,693,763	1,863,139
2018	295,548	325,103	2,031,918	2,235,110
2019	275,292	302,821	2,327,466	2,560,213
2020	207,556	228,311	2,602,758	2,863,034
2021	241,156	265,272	2,810,314	3,091,345
2022	318,182	350,000	3,051,470	3,356,617
2023	318,182	350,000	3,369,652	3,706,617
2024	318,182	350,000	3,687,834	4,056,617
2025	318,182	350,000	4,006,016	4,406,617
2026	318,182	350,000	4,324,198	4,756,617
2027	318,182	350,000	4,642,379	5,106,617
2028	318,182	350,000	4,960,561	5,456,617
2029	318,182	350,000	5,278,743	5,806,617
2030	318,182	350,000	5,596,925	6,156,617
2031	318,182	350,000	5,915,107	6,506,617
2032	318,182	350,000	6,233,289	6,856,617
2033	318,182	350,000	6,551,470	7,206,617
2034	318,182	350,000	6,869,652	7,556,617
2035	318,182	350,000	7,187,834	7,906,617
2036	318,182	350,000	7,506,016	8,256,617
2037	318,182	350,000	7,824,198	8,606,617
2038	318,182	350,000	8,142,379	8,956,617
2039	318,182	350,000	8,460,561	9,306,617
2040	318,182	350,000	8,778,743	9,656,617
2041	318,182	350,000	9,096,925	10,006,617
2042	318,182	350,000	9,415,107	10,356,617
2043	318,182	350,000	9,733,289	10,706,617
2044	318,182	350,000	10,051,470	11,056,617
2045	318,182	350,000	10,369,652	11,406,617
2046	318,182	350,000	10,687,834	11,756,617
2047	318,182	350,000	11,006,016	12,106,617

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2048	318,182	350,000	11,324,198	12,456,617
2049	318,182	350,000	11,642,379	12,806,617
2050	318,182	350,000	11,960,561	13,156,617
2051	318,182	350,000	12,278,743	13,506,617
2052	318,182	350,000	12,596,925	13,856,617
2053	318,182	350,000	12,915,107	14,206,617
2054	318,182	350,000	13,233,289	14,556,617
2055	318,182	350,000	13,551,470	14,906,617
2056	318,182	350,000	13,869,652	15,256,617
2057	318,182	350,000	14,187,834	15,606,617
2058	318,182	350,000	14,506,016	15,956,617
2059	318,182	350,000	14,824,198	16,306,617
2060	318,182	350,000	15,142,379	16,656,617
2061	318,182	350,000	15,460,561	17,006,617
2062	318,182	350,000	15,778,743	17,356,617
2063	0	0	16,096,925	17,706,617
2064	0	0	16,096,925	17,706,617
2065	0	0	16,096,925	17,706,617
2066	0	0	16,096,925	17,706,617
2067	0	0	16,096,925	17,706,617
2068	0	0	16,096,925	17,706,617
2069	0	0	16,096,925	17,706,617
2070	0	0	16,096,925	17,706,617
2071	0	0	16,096,925	17,706,617
2072	0	0	16,096,925	17,706,617
2073	0	0	16,096,925	17,706,617
2074	0	0	16,096,925	17,706,617
2075	0	0	16,096,925	17,706,617
2076	0	0	16,096,925	17,706,617
2077	0	0	16,096,925	17,706,617
2078	0	0	16,096,925	17,706,617
2079	0	0	16,096,925	17,706,617
2080	0	0	16,096,925	17,706,617
2081	0	0	16,096,925	17,706,617
2082	0	0	16,096,925	17,706,617
2083	0	0	16,096,925	17,706,617
2084	0	0	16,096,925	17,706,617
2085	0	0	16,096,925	17,706,617
2086	0	0	16,096,925	17,706,617
2087	0	0	16,096,925	17,706,617

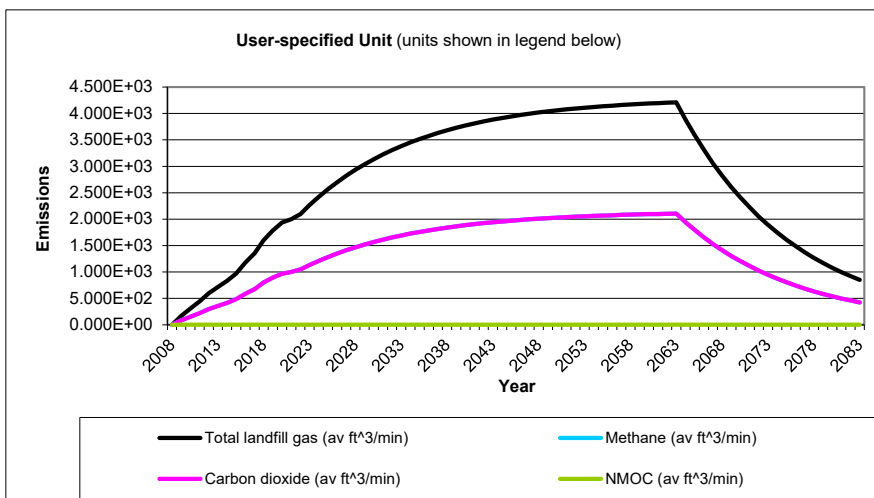
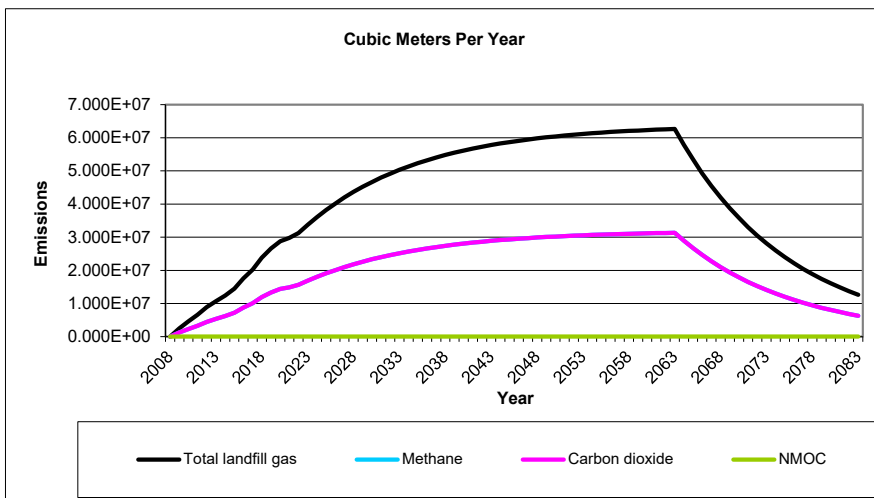
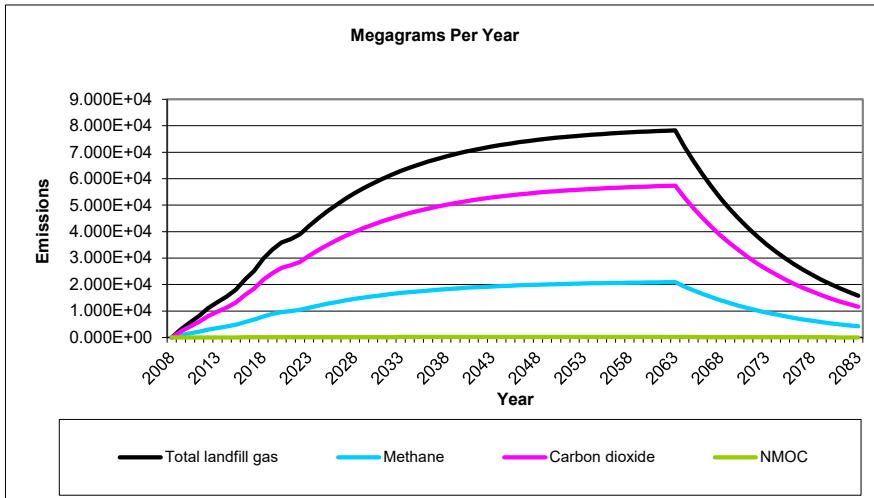
Pollutant Parameters

Gas / Pollutant Default Parameters:				User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

Pollutant Parameters (Continued)

<i>Gas / Pollutant Default Parameters:</i>				<i>User-specified Pollutant Parameters:</i>	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13		
	Ethylbenzene - HAP/VOC	4.6	106.16		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88		
	Fluorotrichloromethane - VOC	0.76	137.38		
	Hexane - HAP/VOC	6.6	86.18		
	Hydrogen sulfide	36	34.08		
	Mercury (total) - HAP	2.9E-04	200.61		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16		
	Methyl mercaptan - VOC	2.5	48.11		
	Pentane - VOC	3.3	72.15		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83		
	Propane - VOC	11	44.09		
	t-1,2-Dichloroethene - VOC	2.8	96.94		
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13		
	Toluene - Co-disposal - HAP/VOC	170	92.13		
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40		
	Vinyl chloride - HAP/VOC	7.3	62.50		
	Xylenes - HAP/VOC	12	106.16		

Graphs



Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2008	0	0	0	0	0	0
2009	3.136E+03	2.511E+06	1.687E+02	8.377E+02	1.256E+06	8.437E+01
2010	5.724E+03	4.584E+06	3.080E+02	1.529E+03	2.292E+06	1.540E+02
2011	8.213E+03	6.577E+06	4.419E+02	2.194E+03	3.288E+06	2.209E+02
2012	1.109E+04	8.879E+06	5.966E+02	2.962E+03	4.440E+06	2.983E+02
2013	1.331E+04	1.066E+07	7.163E+02	3.556E+03	5.330E+06	3.582E+02
2014	1.545E+04	1.237E+07	8.314E+02	4.128E+03	6.187E+06	4.157E+02
2015	1.805E+04	1.446E+07	9.713E+02	4.822E+03	7.228E+06	4.856E+02
2016	2.191E+04	1.754E+07	1.179E+03	5.852E+03	8.771E+06	5.894E+02
2017	2.521E+04	2.018E+07	1.356E+03	6.733E+03	1.009E+07	6.781E+02
2018	2.979E+04	2.385E+07	1.603E+03	7.957E+03	1.193E+07	8.013E+02
2019	3.320E+04	2.658E+07	1.786E+03	8.867E+03	1.329E+07	8.930E+02
2020	3.595E+04	2.879E+07	1.934E+03	9.603E+03	1.439E+07	9.671E+02
2021	3.719E+04	2.978E+07	2.001E+03	9.933E+03	1.489E+07	1.000E+03
2022	3.898E+04	3.121E+07	2.097E+03	1.041E+04	1.561E+07	1.049E+03
2023	4.212E+04	3.372E+07	2.266E+03	1.125E+04	1.686E+07	1.133E+03
2024	4.501E+04	3.604E+07	2.422E+03	1.202E+04	1.802E+07	1.211E+03
2025	4.769E+04	3.819E+07	2.566E+03	1.274E+04	1.909E+07	1.283E+03
2026	5.015E+04	4.016E+07	2.698E+03	1.340E+04	2.008E+07	1.349E+03
2027	5.243E+04	4.199E+07	2.821E+03	1.401E+04	2.099E+07	1.411E+03
2028	5.454E+04	4.367E+07	2.934E+03	1.457E+04	2.184E+07	1.467E+03
2029	5.648E+04	4.522E+07	3.039E+03	1.509E+04	2.261E+07	1.519E+03
2030	5.827E+04	4.666E+07	3.135E+03	1.556E+04	2.333E+07	1.568E+03
2031	5.992E+04	4.798E+07	3.224E+03	1.601E+04	2.399E+07	1.612E+03
2032	6.145E+04	4.921E+07	3.306E+03	1.641E+04	2.460E+07	1.653E+03
2033	6.286E+04	5.034E+07	3.382E+03	1.679E+04	2.517E+07	1.691E+03
2034	6.416E+04	5.138E+07	3.452E+03	1.714E+04	2.569E+07	1.726E+03
2035	6.536E+04	5.234E+07	3.517E+03	1.746E+04	2.617E+07	1.758E+03
2036	6.647E+04	5.323E+07	3.576E+03	1.776E+04	2.661E+07	1.788E+03
2037	6.750E+04	5.405E+07	3.632E+03	1.803E+04	2.702E+07	1.816E+03
2038	6.844E+04	5.481E+07	3.682E+03	1.828E+04	2.740E+07	1.841E+03
2039	6.931E+04	5.550E+07	3.729E+03	1.851E+04	2.775E+07	1.865E+03
2040	7.012E+04	5.615E+07	3.773E+03	1.873E+04	2.807E+07	1.886E+03
2041	7.086E+04	5.674E+07	3.813E+03	1.893E+04	2.837E+07	1.906E+03
2042	7.155E+04	5.729E+07	3.850E+03	1.911E+04	2.865E+07	1.925E+03
2043	7.218E+04	5.780E+07	3.884E+03	1.928E+04	2.890E+07	1.942E+03
2044	7.277E+04	5.827E+07	3.915E+03	1.944E+04	2.913E+07	1.958E+03
2045	7.331E+04	5.870E+07	3.944E+03	1.958E+04	2.935E+07	1.972E+03
2046	7.381E+04	5.910E+07	3.971E+03	1.971E+04	2.955E+07	1.985E+03
2047	7.427E+04	5.947E+07	3.996E+03	1.984E+04	2.973E+07	1.998E+03
2048	7.469E+04	5.981E+07	4.019E+03	1.995E+04	2.990E+07	2.009E+03
2049	7.508E+04	6.012E+07	4.040E+03	2.006E+04	3.006E+07	2.020E+03
2050	7.544E+04	6.041E+07	4.059E+03	2.015E+04	3.021E+07	2.030E+03
2051	7.578E+04	6.068E+07	4.077E+03	2.024E+04	3.034E+07	2.039E+03
2052	7.609E+04	6.093E+07	4.094E+03	2.032E+04	3.046E+07	2.047E+03
2053	7.637E+04	6.115E+07	4.109E+03	2.040E+04	3.058E+07	2.054E+03
2054	7.663E+04	6.137E+07	4.123E+03	2.047E+04	3.068E+07	2.062E+03
2055	7.688E+04	6.156E+07	4.136E+03	2.053E+04	3.078E+07	2.068E+03
2056	7.710E+04	6.174E+07	4.148E+03	2.059E+04	3.087E+07	2.074E+03
2057	7.731E+04	6.190E+07	4.159E+03	2.065E+04	3.095E+07	2.080E+03

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2058	7.750E+04	6.206E+07	4.170E+03	2.070E+04	3.103E+07	2.085E+03
2059	7.767E+04	6.220E+07	4.179E+03	2.075E+04	3.110E+07	2.090E+03
2060	7.784E+04	6.233E+07	4.188E+03	2.079E+04	3.116E+07	2.094E+03
2061	7.799E+04	6.245E+07	4.196E+03	2.083E+04	3.122E+07	2.098E+03
2062	7.813E+04	6.256E+07	4.203E+03	2.087E+04	3.128E+07	2.102E+03
2063	7.825E+04	6.266E+07	4.210E+03	2.090E+04	3.133E+07	2.105E+03
2064	7.224E+04	5.784E+07	3.887E+03	1.930E+04	2.892E+07	1.943E+03
2065	6.668E+04	5.340E+07	3.588E+03	1.781E+04	2.670E+07	1.794E+03
2066	6.156E+04	4.929E+07	3.312E+03	1.644E+04	2.465E+07	1.656E+03
2067	5.682E+04	4.550E+07	3.057E+03	1.518E+04	2.275E+07	1.529E+03
2068	5.245E+04	4.200E+07	2.822E+03	1.401E+04	2.100E+07	1.411E+03
2069	4.842E+04	3.877E+07	2.605E+03	1.293E+04	1.939E+07	1.303E+03
2070	4.470E+04	3.579E+07	2.405E+03	1.194E+04	1.790E+07	1.202E+03
2071	4.126E+04	3.304E+07	2.220E+03	1.102E+04	1.652E+07	1.110E+03
2072	3.809E+04	3.050E+07	2.049E+03	1.017E+04	1.525E+07	1.025E+03
2073	3.516E+04	2.816E+07	1.892E+03	9.392E+03	1.408E+07	9.459E+02
2074	3.246E+04	2.599E+07	1.746E+03	8.670E+03	1.300E+07	8.732E+02
2075	2.996E+04	2.399E+07	1.612E+03	8.003E+03	1.200E+07	8.060E+02
2076	2.766E+04	2.215E+07	1.488E+03	7.388E+03	1.107E+07	7.441E+02
2077	2.553E+04	2.045E+07	1.374E+03	6.820E+03	1.022E+07	6.869E+02
2078	2.357E+04	1.887E+07	1.268E+03	6.296E+03	9.437E+06	6.340E+02
2079	2.176E+04	1.742E+07	1.171E+03	5.812E+03	8.711E+06	5.853E+02
2080	2.008E+04	1.608E+07	1.081E+03	5.365E+03	8.041E+06	5.403E+02
2081	1.854E+04	1.485E+07	9.975E+02	4.952E+03	7.423E+06	4.988E+02
2082	1.711E+04	1.370E+07	9.208E+02	4.572E+03	6.852E+06	4.604E+02
2083	1.580E+04	1.265E+07	8.500E+02	4.220E+03	6.326E+06	4.250E+02
2084	1.458E+04	1.168E+07	7.847E+02	3.896E+03	5.839E+06	3.923E+02
2085	1.346E+04	1.078E+07	7.243E+02	3.596E+03	5.390E+06	3.622E+02
2086	1.243E+04	9.952E+06	6.687E+02	3.320E+03	4.976E+06	3.343E+02
2087	1.147E+04	9.187E+06	6.172E+02	3.064E+03	4.593E+06	3.086E+02
2088	1.059E+04	8.480E+06	5.698E+02	2.829E+03	4.240E+06	2.849E+02
2089	9.776E+03	7.828E+06	5.260E+02	2.611E+03	3.914E+06	2.630E+02
2090	9.025E+03	7.226E+06	4.855E+02	2.411E+03	3.613E+06	2.428E+02
2091	8.331E+03	6.671E+06	4.482E+02	2.225E+03	3.335E+06	2.241E+02
2092	7.690E+03	6.158E+06	4.138E+02	2.054E+03	3.079E+06	2.069E+02
2093	7.099E+03	5.685E+06	3.819E+02	1.896E+03	2.842E+06	1.910E+02
2094	6.553E+03	5.247E+06	3.526E+02	1.750E+03	2.624E+06	1.763E+02
2095	6.049E+03	4.844E+06	3.255E+02	1.616E+03	2.422E+06	1.627E+02
2096	5.584E+03	4.472E+06	3.004E+02	1.492E+03	2.236E+06	1.502E+02
2097	5.155E+03	4.128E+06	2.773E+02	1.377E+03	2.064E+06	1.387E+02
2098	4.759E+03	3.810E+06	2.560E+02	1.271E+03	1.905E+06	1.280E+02
2099	4.393E+03	3.517E+06	2.363E+02	1.173E+03	1.759E+06	1.182E+02
2100	4.055E+03	3.247E+06	2.182E+02	1.083E+03	1.624E+06	1.091E+02
2101	3.743E+03	2.997E+06	2.014E+02	9.999E+02	1.499E+06	1.007E+02
2102	3.455E+03	2.767E+06	1.859E+02	9.230E+02	1.383E+06	9.296E+01
2103	3.190E+03	2.554E+06	1.716E+02	8.520E+02	1.277E+06	8.581E+01
2104	2.945E+03	2.358E+06	1.584E+02	7.865E+02	1.179E+06	7.921E+01
2105	2.718E+03	2.177E+06	1.462E+02	7.260E+02	1.088E+06	7.312E+01
2106	2.509E+03	2.009E+06	1.350E+02	6.702E+02	1.005E+06	6.750E+01
2107	2.316E+03	1.855E+06	1.246E+02	6.187E+02	9.274E+05	6.231E+01
2108	2.138E+03	1.712E+06	1.150E+02	5.711E+02	8.561E+05	5.752E+01

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2109	1.974E+03	1.581E+06	1.062E+02	5.272E+02	7.903E+05	5.310E+01
2110	1.822E+03	1.459E+06	9.803E+01	4.867E+02	7.295E+05	4.901E+01
2111	1.682E+03	1.347E+06	9.049E+01	4.493E+02	6.734E+05	4.525E+01
2112	1.553E+03	1.243E+06	8.354E+01	4.147E+02	6.216E+05	4.177E+01
2113	1.433E+03	1.148E+06	7.711E+01	3.828E+02	5.738E+05	3.856E+01
2114	1.323E+03	1.059E+06	7.118E+01	3.534E+02	5.297E+05	3.559E+01
2115	1.221E+03	9.780E+05	6.571E+01	3.262E+02	4.890E+05	3.286E+01
2116	1.127E+03	9.028E+05	6.066E+01	3.012E+02	4.514E+05	3.033E+01
2117	1.041E+03	8.334E+05	5.600E+01	2.780E+02	4.167E+05	2.800E+01
2118	9.607E+02	7.693E+05	5.169E+01	2.566E+02	3.847E+05	2.585E+01
2119	8.869E+02	7.102E+05	4.772E+01	2.369E+02	3.551E+05	2.386E+01
2120	8.187E+02	6.556E+05	4.405E+01	2.187E+02	3.278E+05	2.202E+01
2121	7.557E+02	6.052E+05	4.066E+01	2.019E+02	3.026E+05	2.033E+01
2122	6.976E+02	5.586E+05	3.753E+01	1.863E+02	2.793E+05	1.877E+01
2123	6.440E+02	5.157E+05	3.465E+01	1.720E+02	2.578E+05	1.732E+01
2124	5.945E+02	4.760E+05	3.199E+01	1.588E+02	2.380E+05	1.599E+01
2125	5.488E+02	4.394E+05	2.953E+01	1.466E+02	2.197E+05	1.476E+01
2126	5.066E+02	4.057E+05	2.726E+01	1.353E+02	2.028E+05	1.363E+01
2127	4.676E+02	3.745E+05	2.516E+01	1.249E+02	1.872E+05	1.258E+01
2128	4.317E+02	3.457E+05	2.323E+01	1.153E+02	1.728E+05	1.161E+01
2129	3.985E+02	3.191E+05	2.144E+01	1.064E+02	1.595E+05	1.072E+01
2130	3.679E+02	2.946E+05	1.979E+01	9.826E+01	1.473E+05	9.896E+00
2131	3.396E+02	2.719E+05	1.827E+01	9.071E+01	1.360E+05	9.135E+00
2132	3.135E+02	2.510E+05	1.687E+01	8.373E+01	1.255E+05	8.433E+00
2133	2.894E+02	2.317E+05	1.557E+01	7.729E+01	1.159E+05	7.784E+00
2134	2.671E+02	2.139E+05	1.437E+01	7.135E+01	1.069E+05	7.186E+00
2135	2.466E+02	1.975E+05	1.327E+01	6.587E+01	9.873E+04	6.633E+00
2136	2.276E+02	1.823E+05	1.225E+01	6.080E+01	9.114E+04	6.123E+00
2137	2.101E+02	1.683E+05	1.131E+01	5.613E+01	8.413E+04	5.653E+00
2138	1.940E+02	1.553E+05	1.044E+01	5.181E+01	7.766E+04	5.218E+00
2139	1.791E+02	1.434E+05	9.634E+00	4.783E+01	7.169E+04	4.817E+00
2140	1.653E+02	1.324E+05	8.893E+00	4.415E+01	6.618E+04	4.447E+00
2141	1.526E+02	1.222E+05	8.209E+00	4.076E+01	6.109E+04	4.105E+00
2142	1.409E+02	1.128E+05	7.578E+00	3.762E+01	5.639E+04	3.789E+00
2143	1.300E+02	1.041E+05	6.996E+00	3.473E+01	5.206E+04	3.498E+00
2144	1.200E+02	9.611E+04	6.458E+00	3.206E+01	4.806E+04	3.229E+00
2145	1.108E+02	8.872E+04	5.961E+00	2.960E+01	4.436E+04	2.981E+00
2146	1.023E+02	8.190E+04	5.503E+00	2.732E+01	4.095E+04	2.751E+00
2147	9.442E+01	7.560E+04	5.080E+00	2.522E+01	3.780E+04	2.540E+00
2148	8.716E+01	6.979E+04	4.689E+00	2.328E+01	3.490E+04	2.345E+00

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2008	0	0	0	0	0	0
2009	2.299E+03	1.256E+06	8.437E+01	7.148E+00	1.994E+03	1.340E-01
2010	4.195E+03	2.292E+06	1.540E+02	1.305E+01	3.639E+03	2.445E-01
2011	6.019E+03	3.288E+06	2.209E+02	1.872E+01	5.222E+03	3.509E-01
2012	8.127E+03	4.440E+06	2.983E+02	2.527E+01	7.050E+03	4.737E-01
2013	9.757E+03	5.330E+06	3.582E+02	3.034E+01	8.465E+03	5.687E-01
2014	1.133E+04	6.187E+06	4.157E+02	3.522E+01	9.825E+03	6.601E-01
2015	1.323E+04	7.228E+06	4.856E+02	4.114E+01	1.148E+04	7.712E-01
2016	1.606E+04	8.771E+06	5.894E+02	4.993E+01	1.393E+04	9.359E-01
2017	1.847E+04	1.009E+07	6.781E+02	5.744E+01	1.603E+04	1.077E+00
2018	2.183E+04	1.193E+07	8.013E+02	6.789E+01	1.894E+04	1.273E+00
2019	2.433E+04	1.329E+07	8.930E+02	7.565E+01	2.111E+04	1.418E+00
2020	2.635E+04	1.439E+07	9.671E+02	8.193E+01	2.286E+04	1.536E+00
2021	2.726E+04	1.489E+07	1.000E+03	8.475E+01	2.364E+04	1.589E+00
2022	2.857E+04	1.561E+07	1.049E+03	8.883E+01	2.478E+04	1.665E+00
2023	3.087E+04	1.686E+07	1.133E+03	9.598E+01	2.678E+04	1.799E+00
2024	3.299E+04	1.802E+07	1.211E+03	1.026E+02	2.862E+04	1.923E+00
2025	3.495E+04	1.909E+07	1.283E+03	1.087E+02	3.032E+04	2.037E+00
2026	3.676E+04	2.008E+07	1.349E+03	1.143E+02	3.189E+04	2.143E+00
2027	3.843E+04	2.099E+07	1.411E+03	1.195E+02	3.334E+04	2.240E+00
2028	3.997E+04	2.184E+07	1.467E+03	1.243E+02	3.467E+04	2.330E+00
2029	4.139E+04	2.261E+07	1.519E+03	1.287E+02	3.591E+04	2.413E+00
2030	4.271E+04	2.333E+07	1.568E+03	1.328E+02	3.705E+04	2.489E+00
2031	4.392E+04	2.399E+07	1.612E+03	1.366E+02	3.810E+04	2.560E+00
2032	4.504E+04	2.460E+07	1.653E+03	1.400E+02	3.907E+04	2.625E+00
2033	4.607E+04	2.517E+07	1.691E+03	1.433E+02	3.997E+04	2.685E+00
2034	4.702E+04	2.569E+07	1.726E+03	1.462E+02	4.079E+04	2.741E+00
2035	4.790E+04	2.617E+07	1.758E+03	1.490E+02	4.156E+04	2.792E+00
2036	4.872E+04	2.661E+07	1.788E+03	1.515E+02	4.226E+04	2.840E+00
2037	4.947E+04	2.702E+07	1.816E+03	1.538E+02	4.291E+04	2.883E+00
2038	5.016E+04	2.740E+07	1.841E+03	1.560E+02	4.352E+04	2.924E+00
2039	5.080E+04	2.775E+07	1.865E+03	1.580E+02	4.407E+04	2.961E+00
2040	5.139E+04	2.807E+07	1.886E+03	1.598E+02	4.458E+04	2.995E+00
2041	5.193E+04	2.837E+07	1.906E+03	1.615E+02	4.505E+04	3.027E+00
2042	5.244E+04	2.865E+07	1.925E+03	1.631E+02	4.549E+04	3.057E+00
2043	5.290E+04	2.890E+07	1.942E+03	1.645E+02	4.589E+04	3.084E+00
2044	5.333E+04	2.913E+07	1.958E+03	1.658E+02	4.627E+04	3.109E+00
2045	5.373E+04	2.935E+07	1.972E+03	1.671E+02	4.661E+04	3.132E+00
2046	5.409E+04	2.955E+07	1.985E+03	1.682E+02	4.693E+04	3.153E+00
2047	5.443E+04	2.973E+07	1.998E+03	1.693E+02	4.722E+04	3.173E+00
2048	5.474E+04	2.990E+07	2.009E+03	1.702E+02	4.749E+04	3.191E+00
2049	5.503E+04	3.006E+07	2.020E+03	1.711E+02	4.774E+04	3.207E+00
2050	5.529E+04	3.021E+07	2.030E+03	1.719E+02	4.797E+04	3.223E+00
2051	5.554E+04	3.034E+07	2.039E+03	1.727E+02	4.818E+04	3.237E+00
2052	5.576E+04	3.046E+07	2.047E+03	1.734E+02	4.838E+04	3.250E+00
2053	5.597E+04	3.058E+07	2.054E+03	1.741E+02	4.856E+04	3.263E+00
2054	5.616E+04	3.068E+07	2.062E+03	1.746E+02	4.872E+04	3.274E+00
2055	5.634E+04	3.078E+07	2.068E+03	1.752E+02	4.888E+04	3.284E+00
2056	5.651E+04	3.087E+07	2.074E+03	1.757E+02	4.902E+04	3.294E+00
2057	5.666E+04	3.095E+07	2.080E+03	1.762E+02	4.915E+04	3.303E+00

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2058	5.680E+04	3.103E+07	2.085E+03	1.766E+02	4.927E+04	3.311E+00
2059	5.693E+04	3.110E+07	2.090E+03	1.770E+02	4.939E+04	3.318E+00
2060	5.705E+04	3.116E+07	2.094E+03	1.774E+02	4.949E+04	3.325E+00
2061	5.716E+04	3.122E+07	2.098E+03	1.777E+02	4.958E+04	3.332E+00
2062	5.726E+04	3.128E+07	2.102E+03	1.780E+02	4.967E+04	3.337E+00
2063	5.735E+04	3.133E+07	2.105E+03	1.783E+02	4.975E+04	3.343E+00
2064	5.294E+04	2.892E+07	1.943E+03	1.646E+02	4.593E+04	3.086E+00
2065	4.887E+04	2.670E+07	1.794E+03	1.520E+02	4.240E+04	2.849E+00
2066	4.511E+04	2.465E+07	1.656E+03	1.403E+02	3.914E+04	2.630E+00
2067	4.165E+04	2.275E+07	1.529E+03	1.295E+02	3.613E+04	2.427E+00
2068	3.844E+04	2.100E+07	1.411E+03	1.195E+02	3.335E+04	2.241E+00
2069	3.549E+04	1.939E+07	1.303E+03	1.104E+02	3.079E+04	2.069E+00
2070	3.276E+04	1.790E+07	1.202E+03	1.019E+02	2.842E+04	1.910E+00
2071	3.024E+04	1.652E+07	1.110E+03	9.404E+01	2.623E+04	1.763E+00
2072	2.792E+04	1.525E+07	1.025E+03	8.681E+01	2.422E+04	1.627E+00
2073	2.577E+04	1.408E+07	9.459E+02	8.013E+01	2.236E+04	1.502E+00
2074	2.379E+04	1.300E+07	8.732E+02	7.397E+01	2.064E+04	1.387E+00
2075	2.196E+04	1.200E+07	8.060E+02	6.828E+01	1.905E+04	1.280E+00
2076	2.027E+04	1.107E+07	7.441E+02	6.303E+01	1.759E+04	1.182E+00
2077	1.871E+04	1.022E+07	6.869E+02	5.819E+01	1.623E+04	1.091E+00
2078	1.727E+04	9.437E+06	6.340E+02	5.371E+01	1.499E+04	1.007E+00
2079	1.595E+04	8.711E+06	5.853E+02	4.958E+01	1.383E+04	9.295E-01
2080	1.472E+04	8.041E+06	5.403E+02	4.577E+01	1.277E+04	8.580E-01
2081	1.359E+04	7.423E+06	4.988E+02	4.225E+01	1.179E+04	7.920E-01
2082	1.254E+04	6.852E+06	4.604E+02	3.900E+01	1.088E+04	7.311E-01
2083	1.158E+04	6.326E+06	4.250E+02	3.601E+01	1.005E+04	6.749E-01
2084	1.069E+04	5.839E+06	3.923E+02	3.324E+01	9.273E+03	6.230E-01
2085	9.867E+03	5.390E+06	3.622E+02	3.068E+01	8.560E+03	5.751E-01
2086	9.108E+03	4.976E+06	3.343E+02	2.832E+01	7.902E+03	5.309E-01
2087	8.408E+03	4.593E+06	3.086E+02	2.615E+01	7.294E+03	4.901E-01
2088	7.762E+03	4.240E+06	2.849E+02	2.414E+01	6.733E+03	4.524E-01
2089	7.165E+03	3.914E+06	2.630E+02	2.228E+01	6.216E+03	4.176E-01
2090	6.614E+03	3.613E+06	2.428E+02	2.057E+01	5.738E+03	3.855E-01
2091	6.106E+03	3.335E+06	2.241E+02	1.899E+01	5.297E+03	3.559E-01
2092	5.636E+03	3.079E+06	2.069E+02	1.753E+01	4.889E+03	3.285E-01
2093	5.203E+03	2.842E+06	1.910E+02	1.618E+01	4.514E+03	3.033E-01
2094	4.803E+03	2.624E+06	1.763E+02	1.493E+01	4.167E+03	2.799E-01
2095	4.434E+03	2.422E+06	1.627E+02	1.379E+01	3.846E+03	2.584E-01
2096	4.093E+03	2.236E+06	1.502E+02	1.273E+01	3.550E+03	2.386E-01
2097	3.778E+03	2.064E+06	1.387E+02	1.175E+01	3.277E+03	2.202E-01
2098	3.488E+03	1.905E+06	1.280E+02	1.084E+01	3.026E+03	2.033E-01
2099	3.219E+03	1.759E+06	1.182E+02	1.001E+01	2.793E+03	1.877E-01
2100	2.972E+03	1.624E+06	1.091E+02	9.241E+00	2.578E+03	1.732E-01
2101	2.743E+03	1.499E+06	1.007E+02	8.531E+00	2.380E+03	1.599E-01
2102	2.532E+03	1.383E+06	9.296E+01	7.875E+00	2.197E+03	1.476E-01
2103	2.338E+03	1.277E+06	8.581E+01	7.269E+00	2.028E+03	1.363E-01
2104	2.158E+03	1.179E+06	7.921E+01	6.711E+00	1.872E+03	1.258E-01
2105	1.992E+03	1.088E+06	7.312E+01	6.195E+00	1.728E+03	1.161E-01
2106	1.839E+03	1.005E+06	6.750E+01	5.718E+00	1.595E+03	1.072E-01
2107	1.698E+03	9.274E+05	6.231E+01	5.279E+00	1.473E+03	9.895E-02
2108	1.567E+03	8.561E+05	5.752E+01	4.873E+00	1.359E+03	9.134E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2109	1.447E+03	7.903E+05	5.310E+01	4.498E+00	1.255E+03	8.432E-02
2110	1.335E+03	7.295E+05	4.901E+01	4.152E+00	1.158E+03	7.784E-02
2111	1.233E+03	6.734E+05	4.525E+01	3.833E+00	1.069E+03	7.185E-02
2112	1.138E+03	6.216E+05	4.177E+01	3.538E+00	9.872E+02	6.633E-02
2113	1.050E+03	5.738E+05	3.856E+01	3.266E+00	9.113E+02	6.123E-02
2114	9.697E+02	5.297E+05	3.559E+01	3.015E+00	8.412E+02	5.652E-02
2115	8.951E+02	4.890E+05	3.286E+01	2.783E+00	7.765E+02	5.217E-02
2116	8.263E+02	4.514E+05	3.033E+01	2.569E+00	7.168E+02	4.816E-02
2117	7.628E+02	4.167E+05	2.800E+01	2.372E+00	6.617E+02	4.446E-02
2118	7.041E+02	3.847E+05	2.585E+01	2.190E+00	6.108E+02	4.104E-02
2119	6.500E+02	3.551E+05	2.386E+01	2.021E+00	5.639E+02	3.789E-02
2120	6.000E+02	3.278E+05	2.202E+01	1.866E+00	5.205E+02	3.497E-02
2121	5.539E+02	3.026E+05	2.033E+01	1.722E+00	4.805E+02	3.228E-02
2122	5.113E+02	2.793E+05	1.877E+01	1.590E+00	4.436E+02	2.980E-02
2123	4.720E+02	2.578E+05	1.732E+01	1.468E+00	4.095E+02	2.751E-02
2124	4.357E+02	2.380E+05	1.599E+01	1.355E+00	3.780E+02	2.540E-02
2125	4.022E+02	2.197E+05	1.476E+01	1.251E+00	3.489E+02	2.344E-02
2126	3.713E+02	2.028E+05	1.363E+01	1.155E+00	3.221E+02	2.164E-02
2127	3.427E+02	1.872E+05	1.258E+01	1.066E+00	2.973E+02	1.998E-02
2128	3.164E+02	1.728E+05	1.161E+01	9.838E-01	2.745E+02	1.844E-02
2129	2.921E+02	1.595E+05	1.072E+01	9.082E-01	2.534E+02	1.702E-02
2130	2.696E+02	1.473E+05	9.896E+00	8.384E-01	2.339E+02	1.571E-02
2131	2.489E+02	1.360E+05	9.135E+00	7.739E-01	2.159E+02	1.451E-02
2132	2.297E+02	1.255E+05	8.433E+00	7.144E-01	1.993E+02	1.339E-02
2133	2.121E+02	1.159E+05	7.784E+00	6.595E-01	1.840E+02	1.236E-02
2134	1.958E+02	1.069E+05	7.186E+00	6.088E-01	1.698E+02	1.141E-02
2135	1.807E+02	9.873E+04	6.633E+00	5.620E-01	1.568E+02	1.053E-02
2136	1.668E+02	9.114E+04	6.123E+00	5.188E-01	1.447E+02	9.724E-03
2137	1.540E+02	8.413E+04	5.653E+00	4.789E-01	1.336E+02	8.976E-03
2138	1.422E+02	7.766E+04	5.218E+00	4.421E-01	1.233E+02	8.286E-03
2139	1.312E+02	7.169E+04	4.817E+00	4.081E-01	1.138E+02	7.649E-03
2140	1.211E+02	6.618E+04	4.447E+00	3.767E-01	1.051E+02	7.061E-03
2141	1.118E+02	6.109E+04	4.105E+00	3.477E-01	9.701E+01	6.518E-03
2142	1.032E+02	5.639E+04	3.789E+00	3.210E-01	8.955E+01	6.017E-03
2143	9.529E+01	5.206E+04	3.498E+00	2.963E-01	8.267E+01	5.554E-03
2144	8.797E+01	4.806E+04	3.229E+00	2.735E-01	7.631E+01	5.127E-03
2145	8.120E+01	4.436E+04	2.981E+00	2.525E-01	7.045E+01	4.733E-03
2146	7.496E+01	4.095E+04	2.751E+00	2.331E-01	6.503E+01	4.369E-03
2147	6.920E+01	3.780E+04	2.540E+00	2.152E-01	6.003E+01	4.033E-03
2148	6.388E+01	3.490E+04	2.345E+00	1.986E-01	5.541E+01	3.723E-03

Input Review: Smith's Creek Non-Bioreactor Areas

LANDFILL CHARACTERISTICS

Landfill Open Year	1967
Landfill Closure Year (with 80-year limit)	2007

MODEL PARAMETERS

Methane Generation Rate, k	0.040	<i>year-1</i>
Potential Methane Generation Capacity, L0	100	<i>m3/Mg</i>
NMOC Concentration	794	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1967	110,273	121,300	0	0
1968	110,364	121,400	110,273	121,300
1969	110,273	121,300	220,636	242,700
1970	110,273	121,300	330,909	364,000
1971	110,364	121,400	441,182	485,300
1972	110,364	121,400	551,545	606,700
1973	110,273	121,300	661,909	728,100
1974	110,273	121,300	772,182	849,400
1975	110,364	121,400	882,455	970,700
1976	110,000	121,000	992,818	1,092,100
1977	110,909	122,000	1,102,818	1,213,100
1978	110,909	122,000	1,213,727	1,335,100
1979	110,000	121,000	1,324,636	1,457,100
1980	110,000	121,000	1,434,636	1,578,100
1981	110,909	122,000	1,544,636	1,699,100
1982	110,000	121,000	1,655,545	1,821,100
1983	110,000	121,000	1,765,545	1,942,100
1984	110,909	122,000	1,875,545	2,063,100
1985	110,000	121,000	1,986,455	2,185,100
1986	110,000	121,000	2,096,455	2,306,100
1987	110,909	122,000	2,206,455	2,427,100
1988	110,000	121,000	2,317,364	2,549,100
1989	110,000	121,000	2,427,364	2,670,100
1990	51,437	56,581	2,537,364	2,791,100
1991	71,377	78,515	2,588,801	2,847,681
1992	70,806	77,886	2,660,178	2,926,196
1993	66,713	73,384	2,730,983	3,004,082
1994	76,118	83,730	2,797,696	3,077,466
1995	95,040	104,545	2,873,814	3,161,195
1996	89,166	98,082	2,968,854	3,265,740
1997	64,707	71,178	3,058,020	3,363,822
1998	114,545	126,000	3,122,727	3,435,000
1999	146,364	161,000	3,237,273	3,561,000
2000	140,909	155,000	3,383,636	3,722,000
2001	136,364	150,000	3,524,545	3,877,000
2002	117,273	129,000	3,660,909	4,027,000
2003	121,179	133,297	3,778,182	4,156,000
2004	127,759	140,535	3,899,361	4,289,297
2005	196,775	216,452	4,027,120	4,429,832
2006	125,401	137,941	4,223,895	4,646,284
2007	201,760	221,936	4,349,296	4,784,225
2008	0	0	4,551,056	5,006,161

Results

Year	Total landfill gas		
	(Mg/year)	(m3/year)	(av ft ³ /min)
1967	0	0	0
1968	1.082E+03	8.665E+05	5.822E+01
1969	2.123E+03	1.700E+06	1.142E+02
1970	3.122E+03	2.500E+06	1.679E+02
1971	4.081E+03	3.268E+06	2.196E+02
1972	5.004E+03	4.007E+06	2.692E+02
1973	5.891E+03	4.717E+06	3.170E+02
1974	6.742E+03	5.399E+06	3.627E+02
1975	7.560E+03	6.054E+06	4.067E+02
1976	8.346E+03	6.683E+06	4.491E+02
1977	9.099E+03	7.286E+06	4.895E+02
1978	9.830E+03	7.872E+06	5.289E+02
1979	1.053E+04	8.434E+06	5.667E+02
1980	1.120E+04	8.968E+06	6.026E+02
1981	1.184E+04	9.481E+06	6.370E+02
1982	1.246E+04	9.981E+06	6.706E+02
1983	1.305E+04	1.045E+07	7.024E+02
1984	1.362E+04	1.091E+07	7.329E+02
1985	1.418E+04	1.135E+07	7.627E+02
1986	1.470E+04	1.177E+07	7.909E+02
1987	1.520E+04	1.217E+07	8.180E+02
1988	1.570E+04	1.257E+07	8.444E+02
1989	1.616E+04	1.294E+07	8.694E+02
1990	1.661E+04	1.330E+07	8.934E+02
1991	1.646E+04	1.318E+07	8.855E+02
1992	1.651E+04	1.322E+07	8.885E+02
1993	1.656E+04	1.326E+07	8.910E+02
1994	1.657E+04	1.327E+07	8.913E+02
1995	1.666E+04	1.334E+07	8.966E+02
1996	1.694E+04	1.357E+07	9.116E+02
1997	1.715E+04	1.374E+07	9.229E+02
1998	1.712E+04	1.371E+07	9.209E+02
1999	1.757E+04	1.407E+07	9.453E+02
2000	1.832E+04	1.467E+07	9.855E+02
2001	1.898E+04	1.520E+07	1.021E+03
2002	1.957E+04	1.567E+07	1.053E+03
2003	1.996E+04	1.598E+07	1.074E+03
2004	2.036E+04	1.631E+07	1.096E+03
2005	2.082E+04	1.667E+07	1.120E+03
2006	2.193E+04	1.756E+07	1.180E+03
2007	2.230E+04	1.786E+07	1.200E+03
2008	2.341E+04	1.875E+07	1.260E+03
2009	2.249E+04	1.801E+07	1.210E+03
2010	2.161E+04	1.730E+07	1.163E+03
2011	2.076E+04	1.663E+07	1.117E+03
2012	1.995E+04	1.597E+07	1.073E+03
2013	1.917E+04	1.535E+07	1.031E+03
2014	1.842E+04	1.475E+07	9.908E+02
2015	1.769E+04	1.417E+07	9.519E+02
2016	1.700E+04	1.361E+07	9.146E+02

Results (Continued)

Year	Total landfill gas		
	(Mg/year)	(m3/year)	(av ft ³ /min)
2017	1.633E+04	1.308E+07	8.787E+02
2018	1.569E+04	1.257E+07	8.443E+02
2019	1.508E+04	1.207E+07	8.112E+02
2020	1.449E+04	1.160E+07	7.794E+02
2021	1.392E+04	1.114E+07	7.488E+02
2022	1.337E+04	1.071E+07	7.195E+02
2023	1.285E+04	1.029E+07	6.912E+02
2024	1.234E+04	9.884E+06	6.641E+02
2025	1.186E+04	9.497E+06	6.381E+02
2026	1.139E+04	9.125E+06	6.131E+02
2027	1.095E+04	8.767E+06	5.890E+02
2028	1.052E+04	8.423E+06	5.659E+02
2029	1.011E+04	8.093E+06	5.438E+02
2030	9.710E+03	7.775E+06	5.224E+02
2031	9.329E+03	7.471E+06	5.019E+02
2032	8.964E+03	7.178E+06	4.823E+02
2033	8.612E+03	6.896E+06	4.634E+02
2034	8.274E+03	6.626E+06	4.452E+02
2035	7.950E+03	6.366E+06	4.277E+02
2036	7.638E+03	6.116E+06	4.110E+02
2037	7.339E+03	5.877E+06	3.948E+02
2038	7.051E+03	5.646E+06	3.794E+02
2039	6.775E+03	5.425E+06	3.645E+02
2040	6.509E+03	5.212E+06	3.502E+02
2041	6.254E+03	5.008E+06	3.365E+02
2042	6.008E+03	4.811E+06	3.233E+02
2043	5.773E+03	4.623E+06	3.106E+02
2044	5.547E+03	4.441E+06	2.984E+02
2045	5.329E+03	4.267E+06	2.867E+02
2046	5.120E+03	4.100E+06	2.755E+02
2047	4.919E+03	3.939E+06	2.647E+02
2048	4.726E+03	3.785E+06	2.543E+02
2049	4.541E+03	3.636E+06	2.443E+02
2050	4.363E+03	3.494E+06	2.347E+02
2051	4.192E+03	3.357E+06	2.255E+02
2052	4.028E+03	3.225E+06	2.167E+02
2053	3.870E+03	3.099E+06	2.082E+02
2054	3.718E+03	2.977E+06	2.000E+02
2055	3.572E+03	2.860E+06	1.922E+02
2056	3.432E+03	2.748E+06	1.847E+02
2057	3.298E+03	2.640E+06	1.774E+02
2058	3.168E+03	2.537E+06	1.705E+02
2059	3.044E+03	2.437E+06	1.638E+02
2060	2.925E+03	2.342E+06	1.574E+02
2061	2.810E+03	2.250E+06	1.512E+02
2062	2.700E+03	2.162E+06	1.453E+02
2063	2.594E+03	2.077E+06	1.396E+02
2064	2.492E+03	1.996E+06	1.341E+02
2065	2.394E+03	1.917E+06	1.288E+02

Results (Continued)

Year	NMOC		
	(Mg/year)	(m3/year)	(av ft ³ /min)
1967	0	0	0
1968	2.466E+00	6.880E+02	4.623E-02
1969	4.838E+00	1.350E+03	9.068E-02
1970	7.114E+00	1.985E+03	1.334E-01
1971	9.301E+00	2.595E+03	1.743E-01
1972	1.140E+01	3.182E+03	2.138E-01
1973	1.343E+01	3.745E+03	2.517E-01
1974	1.537E+01	4.287E+03	2.880E-01
1975	1.723E+01	4.807E+03	3.230E-01
1976	1.902E+01	5.307E+03	3.566E-01
1977	2.074E+01	5.785E+03	3.887E-01
1978	2.240E+01	6.250E+03	4.199E-01
1979	2.400E+01	6.697E+03	4.500E-01
1980	2.552E+01	7.121E+03	4.784E-01
1981	2.698E+01	7.528E+03	5.058E-01
1982	2.841E+01	7.925E+03	5.324E-01
1983	2.975E+01	8.300E+03	5.577E-01
1984	3.104E+01	8.661E+03	5.819E-01
1985	3.231E+01	9.013E+03	6.056E-01
1986	3.350E+01	9.346E+03	6.280E-01
1987	3.465E+01	9.666E+03	6.495E-01
1988	3.577E+01	9.979E+03	6.705E-01
1989	3.683E+01	1.027E+04	6.903E-01
1990	3.784E+01	1.056E+04	7.094E-01
1991	3.751E+01	1.046E+04	7.031E-01
1992	3.763E+01	1.050E+04	7.055E-01
1993	3.774E+01	1.053E+04	7.075E-01
1994	3.775E+01	1.053E+04	7.077E-01
1995	3.798E+01	1.059E+04	7.119E-01
1996	3.861E+01	1.077E+04	7.238E-01
1997	3.909E+01	1.091E+04	7.328E-01
1998	3.901E+01	1.088E+04	7.312E-01
1999	4.004E+01	1.117E+04	7.505E-01
2000	4.174E+01	1.165E+04	7.825E-01
2001	4.326E+01	1.207E+04	8.108E-01
2002	4.461E+01	1.245E+04	8.362E-01
2003	4.548E+01	1.269E+04	8.526E-01
2004	4.641E+01	1.295E+04	8.700E-01
2005	4.745E+01	1.324E+04	8.894E-01
2006	4.999E+01	1.395E+04	9.370E-01
2007	5.083E+01	1.418E+04	9.528E-01
2008	5.335E+01	1.488E+04	1.000E+00
2009	5.126E+01	1.430E+04	9.609E-01
2010	4.925E+01	1.374E+04	9.232E-01
2011	4.732E+01	1.320E+04	8.870E-01
2012	4.546E+01	1.268E+04	8.522E-01
2013	4.368E+01	1.219E+04	8.188E-01
2014	4.197E+01	1.171E+04	7.867E-01
2015	4.032E+01	1.125E+04	7.558E-01
2016	3.874E+01	1.081E+04	7.262E-01

Results (Continued)

Year	NMOC		
	(Mg/year)	(m3/year)	(av ft ³ /min)
2017	3.722E+01	1.038E+04	6.977E-01
2018	3.576E+01	9.977E+03	6.704E-01
2019	3.436E+01	9.586E+03	6.441E-01
2020	3.301E+01	9.210E+03	6.188E-01
2021	3.172E+01	8.849E+03	5.946E-01
2022	3.047E+01	8.502E+03	5.712E-01
2023	2.928E+01	8.169E+03	5.488E-01
2024	2.813E+01	7.848E+03	5.273E-01
2025	2.703E+01	7.541E+03	5.066E-01
2026	2.597E+01	7.245E+03	4.868E-01
2027	2.495E+01	6.961E+03	4.677E-01
2028	2.397E+01	6.688E+03	4.494E-01
2029	2.303E+01	6.426E+03	4.317E-01
2030	2.213E+01	6.174E+03	4.148E-01
2031	2.126E+01	5.932E+03	3.985E-01
2032	2.043E+01	5.699E+03	3.829E-01
2033	1.963E+01	5.476E+03	3.679E-01
2034	1.886E+01	5.261E+03	3.535E-01
2035	1.812E+01	5.055E+03	3.396E-01
2036	1.741E+01	4.856E+03	3.263E-01
2037	1.673E+01	4.666E+03	3.135E-01
2038	1.607E+01	4.483E+03	3.012E-01
2039	1.544E+01	4.307E+03	2.894E-01
2040	1.483E+01	4.138E+03	2.781E-01
2041	1.425E+01	3.976E+03	2.672E-01
2042	1.369E+01	3.820E+03	2.567E-01
2043	1.316E+01	3.670E+03	2.466E-01
2044	1.264E+01	3.526E+03	2.369E-01
2045	1.214E+01	3.388E+03	2.277E-01
2046	1.167E+01	3.255E+03	2.187E-01
2047	1.121E+01	3.128E+03	2.101E-01
2048	1.077E+01	3.005E+03	2.019E-01
2049	1.035E+01	2.887E+03	1.940E-01
2050	9.943E+00	2.774E+03	1.864E-01
2051	9.553E+00	2.665E+03	1.791E-01
2052	9.179E+00	2.561E+03	1.721E-01
2053	8.819E+00	2.460E+03	1.653E-01
2054	8.473E+00	2.364E+03	1.588E-01
2055	8.141E+00	2.271E+03	1.526E-01
2056	7.822E+00	2.182E+03	1.466E-01
2057	7.515E+00	2.097E+03	1.409E-01
2058	7.220E+00	2.014E+03	1.353E-01
2059	6.937E+00	1.935E+03	1.300E-01
2060	6.665E+00	1.859E+03	1.249E-01
2061	6.404E+00	1.787E+03	1.200E-01
2062	6.153E+00	1.717E+03	1.153E-01
2063	5.912E+00	1.649E+03	1.108E-01
2064	5.680E+00	1.585E+03	1.065E-01
2065	5.457E+00	1.522E+03	1.023E-01

Input Review: Smith's Creek Bioreactor Areas

LANDFILL CHARACTERISTICS

Landfill Open Year	2008
Landfill Closure Year (with 80-year limit)	2062

MODEL PARAMETERS

Methane Generation Rate, k	0.080	<i>year-1</i>
Potential Methane Generation Capacity, L0	100	<i>m3/Mg</i>
NMOC Concentration	794	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2008	162,673	178,940	0	0
2009	146,728	161,401	162,673	178,940
2010	151,926	167,119	309,401	340,341
2011	181,915	200,107	461,327	507,460
2012	159,612	175,573	643,243	707,567
2013	164,048	180,453	802,855	883,140
2014	196,459	216,105	966,903	1,063,593
2015	271,975	299,172	1,163,362	1,279,698
2016	258,426	284,269	1,435,336	1,578,870
2017	338,155	371,971	1,693,763	1,863,139
2018	295,548	325,103	2,031,918	2,235,110
2019	275,292	302,821	2,327,466	2,560,213
2020	207,556	228,311	2,602,758	2,863,034
2021	241,156	265,272	2,810,314	3,091,345
2022	318,182	350,000	3,051,470	3,356,617
2023	318,182	350,000	3,369,652	3,706,617
2024	318,182	350,000	3,687,834	4,056,617
2025	318,182	350,000	4,006,016	4,406,617
2026	318,182	350,000	4,324,198	4,756,617
2027	318,182	350,000	4,642,379	5,106,617
2028	318,182	350,000	4,960,561	5,456,617
2029	318,182	350,000	5,278,743	5,806,617
2030	318,182	350,000	5,596,925	6,156,617
2031	318,182	350,000	5,915,107	6,506,617
2032	318,182	350,000	6,233,289	6,856,617
2033	318,182	350,000	6,551,470	7,206,617
2034	318,182	350,000	6,869,652	7,556,617
2035	318,182	350,000	7,187,834	7,906,617
2036	318,182	350,000	7,506,016	8,256,617
2037	318,182	350,000	7,824,198	8,606,617
2038	318,182	350,000	8,142,379	8,956,617
2039	318,182	350,000	8,460,561	9,306,617
2040	318,182	350,000	8,778,743	9,656,617
2041	318,182	350,000	9,096,925	10,006,617
2042	318,182	350,000	9,415,107	10,356,617
2043	318,182	350,000	9,733,289	10,706,617
2044	318,182	350,000	10,051,470	11,056,617
2045	318,182	350,000	10,369,652	11,406,617
2046	318,182	350,000	10,687,834	11,756,617
2047	318,182	350,000	11,006,016	12,106,617

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2048	318,182	350,000	11,324,198	12,456,617
2049	318,182	350,000	11,642,379	12,806,617
2050	318,182	350,000	11,960,561	13,156,617
2051	318,182	350,000	12,278,743	13,506,617
2052	318,182	350,000	12,596,925	13,856,617
2053	318,182	350,000	12,915,107	14,206,617
2054	318,182	350,000	13,233,289	14,556,617
2055	318,182	350,000	13,551,470	14,906,617
2056	318,182	350,000	13,869,652	15,256,617
2057	318,182	350,000	14,187,834	15,606,617
2058	318,182	350,000	14,506,016	15,956,617
2059	318,182	350,000	14,824,198	16,306,617
2060	318,182	350,000	15,142,379	16,656,617
2061	318,182	350,000	15,460,561	17,006,617
2062	318,182	350,000	15,778,743	17,356,617
2063	0	0	16,096,925	17,706,617

Results

Year	Total landfill gas		
	(Mg/year)	(m3/year)	(av ft ³ /min)
2008	0	0	0
2009	3.136E+03	2.511E+06	1.687E+02
2010	5.724E+03	4.584E+06	3.080E+02
2011	8.213E+03	6.577E+06	4.419E+02
2012	1.109E+04	8.879E+06	5.966E+02
2013	1.331E+04	1.066E+07	7.163E+02
2014	1.545E+04	1.237E+07	8.314E+02
2015	1.805E+04	1.446E+07	9.713E+02
2016	2.191E+04	1.754E+07	1.179E+03
2017	2.521E+04	2.018E+07	1.356E+03
2018	2.979E+04	2.385E+07	1.603E+03
2019	3.320E+04	2.658E+07	1.786E+03
2020	3.595E+04	2.879E+07	1.934E+03
2021	3.719E+04	2.978E+07	2.001E+03
2022	3.898E+04	3.121E+07	2.097E+03
2023	4.212E+04	3.372E+07	2.266E+03
2024	4.501E+04	3.604E+07	2.422E+03
2025	4.769E+04	3.819E+07	2.566E+03
2026	5.015E+04	4.016E+07	2.698E+03
2027	5.243E+04	4.199E+07	2.821E+03
2028	5.454E+04	4.367E+07	2.934E+03
2029	5.648E+04	4.522E+07	3.039E+03
2030	5.827E+04	4.666E+07	3.135E+03
2031	5.992E+04	4.798E+07	3.224E+03
2032	6.145E+04	4.921E+07	3.306E+03
2033	6.286E+04	5.034E+07	3.382E+03
2034	6.416E+04	5.138E+07	3.452E+03
2035	6.536E+04	5.234E+07	3.517E+03
2036	6.647E+04	5.323E+07	3.576E+03
2037	6.750E+04	5.405E+07	3.632E+03
2038	6.844E+04	5.481E+07	3.682E+03
2039	6.931E+04	5.550E+07	3.729E+03
2040	7.012E+04	5.615E+07	3.773E+03
2041	7.086E+04	5.674E+07	3.813E+03
2042	7.155E+04	5.729E+07	3.850E+03
2043	7.218E+04	5.780E+07	3.884E+03
2044	7.277E+04	5.827E+07	3.915E+03
2045	7.331E+04	5.870E+07	3.944E+03
2046	7.381E+04	5.910E+07	3.971E+03
2047	7.427E+04	5.947E+07	3.996E+03
2048	7.469E+04	5.981E+07	4.019E+03
2049	7.508E+04	6.012E+07	4.040E+03
2050	7.544E+04	6.041E+07	4.059E+03
2051	7.578E+04	6.068E+07	4.077E+03
2052	7.609E+04	6.093E+07	4.094E+03
2053	7.637E+04	6.115E+07	4.109E+03
2054	7.663E+04	6.137E+07	4.123E+03
2055	7.688E+04	6.156E+07	4.136E+03
2056	7.710E+04	6.174E+07	4.148E+03
2057	7.731E+04	6.190E+07	4.159E+03
2058	7.750E+04	6.206E+07	4.170E+03
2059	7.767E+04	6.220E+07	4.179E+03
2060	7.784E+04	6.233E+07	4.188E+03
2061	7.799E+04	6.245E+07	4.196E+03
2062	7.813E+04	6.256E+07	4.203E+03
2063	7.825E+04	6.266E+07	4.210E+03
2064	7.224E+04	5.784E+07	3.887E+03
2065	6.668E+04	5.340E+07	3.588E+03

Results (Continued)

Year	NMOC		
	(Mg/year)	(m3/year)	(av ft ³ /min)
2008	0	0	0
2009	7.148E+00	1.994E+03	1.340E-01
2010	1.305E+01	3.639E+03	2.445E-01
2011	1.872E+01	5.222E+03	3.509E-01
2012	2.527E+01	7.050E+03	4.737E-01
2013	3.034E+01	8.465E+03	5.687E-01
2014	3.522E+01	9.825E+03	6.601E-01
2015	4.114E+01	1.148E+04	7.712E-01
2016	4.993E+01	1.393E+04	9.359E-01
2017	5.744E+01	1.603E+04	1.077E+00
2018	6.789E+01	1.894E+04	1.273E+00
2019	7.565E+01	2.111E+04	1.418E+00
2020	8.193E+01	2.286E+04	1.536E+00
2021	8.475E+01	2.364E+04	1.589E+00
2022	8.883E+01	2.478E+04	1.665E+00
2023	9.598E+01	2.678E+04	1.799E+00
2024	1.026E+02	2.862E+04	1.923E+00
2025	1.087E+02	3.032E+04	2.037E+00
2026	1.143E+02	3.189E+04	2.143E+00
2027	1.195E+02	3.334E+04	2.240E+00
2028	1.243E+02	3.467E+04	2.330E+00
2029	1.287E+02	3.591E+04	2.413E+00
2030	1.328E+02	3.705E+04	2.489E+00
2031	1.366E+02	3.810E+04	2.560E+00
2032	1.400E+02	3.907E+04	2.625E+00
2033	1.433E+02	3.997E+04	2.685E+00
2034	1.462E+02	4.079E+04	2.741E+00
2035	1.490E+02	4.156E+04	2.792E+00
2036	1.515E+02	4.226E+04	2.840E+00
2037	1.538E+02	4.291E+04	2.883E+00
2038	1.560E+02	4.352E+04	2.924E+00
2039	1.580E+02	4.407E+04	2.961E+00
2040	1.598E+02	4.458E+04	2.995E+00
2041	1.615E+02	4.505E+04	3.027E+00
2042	1.631E+02	4.549E+04	3.057E+00
2043	1.645E+02	4.589E+04	3.084E+00
2044	1.658E+02	4.627E+04	3.109E+00
2045	1.671E+02	4.661E+04	3.132E+00
2046	1.682E+02	4.693E+04	3.153E+00
2047	1.693E+02	4.722E+04	3.173E+00
2048	1.702E+02	4.749E+04	3.191E+00
2049	1.711E+02	4.774E+04	3.207E+00
2050	1.719E+02	4.797E+04	3.223E+00
2051	1.727E+02	4.818E+04	3.237E+00
2052	1.734E+02	4.838E+04	3.250E+00
2053	1.741E+02	4.856E+04	3.263E+00
2054	1.746E+02	4.872E+04	3.274E+00
2055	1.752E+02	4.888E+04	3.284E+00
2056	1.757E+02	4.902E+04	3.294E+00
2057	1.762E+02	4.915E+04	3.303E+00
2058	1.766E+02	4.927E+04	3.311E+00
2059	1.770E+02	4.939E+04	3.318E+00
2060	1.774E+02	4.949E+04	3.325E+00
2061	1.777E+02	4.958E+04	3.332E+00
2062	1.780E+02	4.967E+04	3.337E+00
2063	1.783E+02	4.975E+04	3.343E+00
2064	1.646E+02	4.593E+04	3.086E+00
2065	1.520E+02	4.240E+04	2.849E+00

INTRODUCTION

LandGEM - Landfill Gas Emissions Model, Version 3.03

U.S. Environmental Protection Agency

Model Design:

Worksheet Name	Function
<u>INTRO</u>	Contains an overview of the model and important notes about using LandGEM
<u>USER INPUTS</u>	Allows users to provide landfill characteristics, determine model parameters, select up to four gases/pollutants (total landfill gas, methane, carbon dioxide, NMOC, and 46 air pollutants), and enter waste acceptance rates
<u>POLLUTANTS</u>	Allows users to edit air pollutant concentrations and molecular weights for existing pollutants and add up to 10 new pollutants
<u>INPUT REVIEW</u>	Allows users to review and print model inputs
<u>METHANE</u>	Calculates methane emission estimates using the first-order decomposition rate equation
<u>RESULTS</u>	Shows tabular emission estimates for up to four gases/pollutants (selected in the USER INPUTS worksheet) in megagrams per year, cubic meters per year, and user's choice of a third unit of measure (average cubic feet per minute, cubic feet per year, or short tons per year)
<u>GRAPHS</u>	Shows graphical emission estimates for up to four gases/pollutants (selected in the USER INPUTS worksheet) in megagrams per year, cubic meters per year, and user's choice of a third unit of measure (selected in the RESULTS worksheet)
<u>INVENTORY</u>	Displays tabular emission estimates for all gases/pollutants for a single year specified by users
<u>REPORT</u>	Allows users to review and print model inputs and outputs in a summary report

IMPORTANT NOTES!

The following user inputs **MUST** be completed in the USER INPUTS worksheet:

- Landfill open year
- Landfill closure year or Waste design capacity
- Annual waste acceptance rates from open year to current year or closure year

Other Important Notes:

- LandGEM is based on the gas generated from anaerobic decomposition of landfilled waste which has a methane content between 40 and 60 percent.
- When using LandGEM to comply with the CAA, the methane content of the landfill gas must remain fixed at 50% by volume (the model default value).
- Default pollutant concentrations used by LandGEM have already been corrected for air infiltration, as stated in AP-42. If a user-specified value for NMOC concentration is used based on site-specific data, then it must be corrected for air infiltration.
- When comparing results from LandGEM with measurements of extracted gas collected at a site, the landfill owner/operator must adjust for air infiltration prior to any comparisons.
- One megagram is equivalent to one metric ton.

About LandGEM:

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

USER INPUTS

Landfill Name or Identifier:

Clear ALL Non-Parameter Inputs/Selections

1: PROVIDE LANDFILL CHARACTERISTICS

Landfill Open Year	<input type="text" value="1967"/>	
Landfill Closure Year	<input type="text" value="2007"/>	
Have Model Calculate Closure Year?	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Waste Design Capacity	<input type="text"/>	<input type="text" value="megagrams"/> ▼

Restore Default Model Parameters

2: DETERMINE MODEL PARAMETERS

Methane Generation Rate, k (year⁻¹)	
<input type="text" value="Inventory Conventional - 0.04"/> ▼	
Potential Methane Generation Capacity, L₀ (m³/Mg)	
<input type="text" value="Inventory Conventional - 100"/> ▼	
NMOC Concentration (ppmv as hexane)	
<input type="text" value="User-specified"/> ▼	User-specified value: <input type="text" value="794"/>
Methane Content (% by volume)	
<input type="text" value="CAA - 50% by volume"/> ▼	

3: SELECT GASES/POLLUTANTS

Gas / Pollutant #1		Default pollutant parameters are currently being used by model.	Edit Existing or Add New Pollutant Parameters
<input type="text" value="Total landfill gas"/> ▼			
Gas / Pollutant #2			
<input type="text" value="Methane"/> ▼			
Gas / Pollutant #3		Restore Default Pollutant Parameters	
<input type="text" value="Carbon dioxide"/> ▼			
Gas / Pollutant #4			
<input type="text" value="NMOC"/> ▼			

Description/Comments:

4: ENTER WASTE ACCEPTANCE RATES

Input Units:

Year	Input Units (short tons/year)	Calculated Units (Mg/year)
1967	121,300	110,273
1968	121,400	110,364
1969	121,300	110,273
1970	121,300	110,273
1971	121,400	110,364
1972	121,400	110,364
1973	121,300	110,273
1974	121,300	110,273
1975	121,400	110,364
1976	121,000	110,000
1977	122,000	110,909
1978	122,000	110,909
1979	121,000	110,000
1980	121,000	110,000
1981	122,000	110,909
1982	121,000	110,000
1983	121,000	110,000
1984	122,000	110,909
1985	121,000	110,000
1986	121,000	110,000
1987	122,000	110,909
1988	121,000	110,000
1989	121,000	110,000
1990	56,581	51,437
1991	78,515	71,377
1992	77,886	70,806
1993	73,384	66,713
1994	83,730	76,118
1995	104,545	95,040
1996	98,082	89,166
1997	71,178	64,707
1998	126,000	114,545
1999	161,000	146,364
2000	155,000	140,909
2001	150,000	136,364
2002	129,000	117,273
2003	133,297	121,179
2004	140,535	127,759
2005	216,452	196,775
2006	137,941	125,401

4: ENTER WASTE ACCEPTANCE RATES

Input Units:

Year	Input Units (short tons/year)	Calculated Units (Mg/year)
2007	221,936	201,760
2008		
2009		
2010		
2011		
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		
2020		
2021		
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2043		
2044		
2045		
2046		

POLLUTANTS

Landfill Name or Identifier: Smiths Creek ROP Renewal Non-Bioreactor

Enter New Pollutant Parameters

Edit Existing Pollutant Parameters

Default parameters will be used by model unless alternate parameters are entered.

Enter User-specified Pollutant Parameters for Existing Pollutants:

Gas / Pollutant Default Parameters:

	Compound	Concentration (ppmv)	Molecular Weight	Notes	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		30.03			
	Methane		16.04			
	Carbon dioxide		44.01			
	NMOC	794	86.18			
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41	A		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85	A, B		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97	A, B		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94	A, B		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96	A, B		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99	A, B		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11	B		
	Acetone	7.0	58.08			
	Acrylonitrile - HAP/VOC	6.3	53.06	A, B		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11	A, B		
	Benzene - Co-disposal - HAP/VOC	11	78.11	A, B		
	Bromodichloromethane - VOC	3.1	163.83	B		
	Butane - VOC	5.0	58.12	B		
	Carbon disulfide - HAP/VOC	0.58	76.13	A, B		
	Carbon monoxide	140	28.01			
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84	A, B		
	Carbonyl sulfide - HAP/VOC	0.49	60.07	A, B		
	Chlorobenzene - HAP/VOC	0.25	112.56	A, B		
	Chlorodifluoromethane	1.3	86.47			
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52	A, B		
	Chloroform - HAP/VOC	0.03	119.39	A, B		
	Chloromethane - VOC	1.2	50.49	B		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147	B, C		
	Dichlorodifluoromethane	16	120.91			
	Dichlorofluoromethane - VOC	2.6	102.92	B		
	Dichloromethane (methylene chloride) - HAP	14	84.94	A		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13	B		
	Ethane	890	30.07			
	Ethanol - VOC	27	46.08	B		
	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13	B		
	Ethylbenzene - HAP/VOC	4.6	106.16	A, B		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88	A, B		
	Fluorotrichloromethane - VOC	0.76	137.38	B		
	Hexane - HAP/VOC	6.6	86.18	A, B		
	Hydrogen sulfide	36	34.08			
	Mercury (total) - HAP	2.9E-04	200.61	A		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11	A, B		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16	A, B		
	Methyl mercaptan - VOC	2.5	48.11	B		
	Pentane - VOC	3.3	72.15	B		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83	A		
	Propane - VOC	11	44.09	B		
	t-1,2-Dichloroethene - VOC	2.8	96.94	B		
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13	A, B		
	Toluene - Co-disposal - HAP/VOC	170	92.13	A, B		
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40	A, B		
	Vinyl chloride - HAP/VOC	7.3	62.50	A, B		
Xylenes - HAP/VOC	12	106.16	A, B			

Enter New Compound	Enter Concentration (ppmv)	Enter Molecular Weight

**Return to
USER INPUTS**

- A. Hazardous air pollutants (HAP) listed in Title III of the 1990 Clean Air Act Amendments.
- B. Considered volatile organic compounds (VOC), as defined by U.S. EPA in 40 CFR 51.100(s).
- C. Source tests did not indicate whether this compound was the para- or ortho- isomer. The para-isomer is a Title III-listed HAP.

Source: Tables 2.4-1 and 2.4-2 of *Compilation of Air Pollutant Emission Factors, AP-42, Volume 1: Stationary Point and Area Sources*, 5th ed., Chapter 2.4 Municipal Solid Waste Landfills. U.S. EPA, Office of Air Quality Planning and Standards. Research Triangle Park, NC. November 1998. <http://www.epa.gov/ttn/chief/ap42/ch02/final/c02s04.pdf>

INPUT REVIEW

Landfill Name or Identifier: Smiths Creek ROP Renewal Non-Bioreactor

LANDFILL CHARACTERISTICS

Landfill Open Year	1967	
Landfill Closure Year (with 80-year limit)	2007	
<i>Actual Closure Year (without limit)</i>	2007	
Have Model Calculate Closure Year?	No	
Waste Design Capacity		<i>megagrams</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.040	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	100	<i>m³/Mg</i>
NMOC Concentration	794	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

Description/Comments:
--

WASTE ACCEPTANCE RATES

Year	(Mg/year)	(short tons/year)
1967	110,273	121,300
1968	110,364	121,400
1969	110,273	121,300
1970	110,273	121,300
1971	110,364	121,400
1972	110,364	121,400
1973	110,273	121,300
1974	110,273	121,300
1975	110,364	121,400
1976	110,000	121,000
1977	110,909	122,000
1978	110,909	122,000
1979	110,000	121,000
1980	110,000	121,000
1981	110,909	122,000
1982	110,000	121,000
1983	110,000	121,000
1984	110,909	122,000
1985	110,000	121,000
1986	110,000	121,000
1987	110,909	122,000
1988	110,000	121,000
1989	110,000	121,000
1990	51,437	56,581
1991	71,377	78,515
1992	70,806	77,886
1993	66,713	73,384
1994	76,118	83,730
1995	95,040	104,545
1996	89,166	98,082
1997	64,707	71,178
1998	114,545	126,000
1999	146,364	161,000
2000	140,909	155,000
2001	136,364	150,000
2002	117,273	129,000
2003	121,179	133,297
2004	127,759	140,535
2005	196,775	216,452
2006	125,401	137,941
2007	201,760	221,936

WASTE ACCEPTANCE RATES

Year	(Mg/year)	(short tons/year)
2008	0	0
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0
2017	0	0
2018	0	0
2019	0	0
2020	0	0
2021	0	0
2022	0	0
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0
2031	0	0
2032	0	0
2033	0	0
2034	0	0
2035	0	0
2036	0	0
2037	0	0
2038	0	0
2039	0	0
2040	0	0
2041	0	0
2042	0	0
2043	0	0
2044	0	0
2045	0	0
2046	0	0

METHANE**Landfill Name or Identifier:** Smiths Creek ROP Renewal Non-Bioreactor

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 kL_0 \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

 Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$) M_i = mass of waste accepted in the i^{th} year (Mg) i = 1-year time increment t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years) n = (year of the calculation) - (initial year of waste acceptance) j = 0.1-year time increment k = methane generation rate ($year^{-1}$)

Model Parameters from User Inputs:

 L_0 = potential methane generation capacity (m^3/Mg)

$k = 0.040 \text{ year}^{-1}$

$L_0 = 100 \text{ m}^3/Mg$

When Model Calculates Closure Year...

Final Non-Zero Acceptance Entered =	201,760 megagrams in	2007
Waste Design Capacity =	megagrams	
Closure Year (with 80-year limit) =	2007	
Actual Closure Year (without limit) =	2007	
Model Waste Acceptance Limit =	80 years	

Year	User Waste Acceptance Inputs (Mg/year)	User Waste-In Place (Mg)	Waste Acceptance (Mg/year)	Waste-In-Place (Mg)
1967	110,273	0	110,273	0
1968	110,364	110,273	110,364	110,273
1969	110,273	220,636	110,273	220,636
1970	110,273	330,909	110,273	330,909
1971	110,364	441,182	110,364	441,182
1972	110,364	551,545	110,364	551,545
1973	110,273	661,909	110,273	661,909
1974	110,273	772,182	110,273	772,182
1975	110,364	882,455	110,364	882,455
1976	110,000	992,818	110,000	992,818
1977	110,909	1,102,818	110,909	1,102,818
1978	110,909	1,213,727	110,909	1,213,727
1979	110,000	1,324,636	110,000	1,324,636
1980	110,000	1,434,636	110,000	1,434,636
1981	110,909	1,544,636	110,909	1,544,636
1982	110,000	1,655,545	110,000	1,655,545
1983	110,000	1,765,545	110,000	1,765,545
1984	110,909	1,875,545	110,909	1,875,545
1985	110,000	1,986,455	110,000	1,986,455
1986	110,000	2,096,455	110,000	2,096,455
1987	110,909	2,206,455	110,909	2,206,455
1988	110,000	2,317,364	110,000	2,317,364
1989	110,000	2,427,364	110,000	2,427,364
1990	51,437	2,537,364	51,437	2,537,364
1991	71,377	2,588,801	71,377	2,588,801
1992	70,806	2,660,178	70,806	2,660,178
1993	66,713	2,730,983	66,713	2,730,983
1994	76,118	2,797,696	76,118	2,797,696
1995	95,040	2,873,814	95,040	2,873,814
1996	89,166	2,968,854	89,166	2,968,854
1997	64,707	3,058,020	64,707	3,058,020
1998	114,545	3,122,727	114,545	3,122,727
1999	146,364	3,237,273	146,364	3,237,273
2000	140,909	3,383,636	140,909	3,383,636
2001	136,364	3,524,545	136,364	3,524,545
2002	117,273	3,660,909	117,273	3,660,909
2003	121,179	3,778,182	121,179	3,778,182
2004	127,759	3,899,361	127,759	3,899,361
2005	196,775	4,027,120	196,775	4,027,120
2006	125,401	4,223,895	125,401	4,223,895
2007	201,760	4,349,296	201,760	4,349,296
2008	0	4,551,056	0	4,551,056
2009	0	4,551,056	0	4,551,056
2010	0	4,551,056	0	4,551,056
2011	0	4,551,056	0	4,551,056
2012	0	4,551,056	0	4,551,056
2013	0	4,551,056	0	4,551,056
2014	0	4,551,056	0	4,551,056
2015	0	4,551,056	0	4,551,056
2016	0	4,551,056	0	4,551,056
2017	0	4,551,056	0	4,551,056
2018	0	4,551,056	0	4,551,056
2019	0	4,551,056	0	4,551,056
2020	0	4,551,056	0	4,551,056
2021	0	4,551,056	0	4,551,056
2022	0	4,551,056	0	4,551,056
2023	0	4,551,056	0	4,551,056
2024	0	4,551,056	0	4,551,056
2025	0	4,551,056	0	4,551,056
2026	0	4,551,056	0	4,551,056

Year	User Waste Acceptance Inputs (Mg/year)	User Waste-In-Place (Mg)	Waste Acceptance (Mg/year)	Waste-In-Place (Mg)
2027	0	4,551,056	0	4,551,056
2028	0	4,551,056	0	4,551,056
2029	0	4,551,056	0	4,551,056
2030	0	4,551,056	0	4,551,056
2031	0	4,551,056	0	4,551,056
2032	0	4,551,056	0	4,551,056
2033	0	4,551,056	0	4,551,056
2034	0	4,551,056	0	4,551,056
2035	0	4,551,056	0	4,551,056
2036	0	4,551,056	0	4,551,056
2037	0	4,551,056	0	4,551,056
2038	0	4,551,056	0	4,551,056
2039	0	4,551,056	0	4,551,056
2040	0	4,551,056	0	4,551,056
2041	0	4,551,056	0	4,551,056
2042	0	4,551,056	0	4,551,056
2043	0	4,551,056	0	4,551,056
2044	0	4,551,056	0	4,551,056
2045	0	4,551,056	0	4,551,056
2046	0	4,551,056	0	4,551,056

RESULTS

Landfill Name or Identifier: Smiths Creek ROP Renewal Non-Bioreactor

Please choose a third unit of measure to represent all of the emission rates below.

Closure Year (with 80-year limit) = 2007
Methane = 50 % by volume

User-specified Unit:

Year	Waste Accepted		Waste-in-Place		Total landfill gas			Methane			Carbon dioxide			NMOC		
	(Mg/year)	(short tons/year)	(Mg)	(short tons)	(Mg/year)	(m³/year)	(av ft³/3min)	(Mg/year)	(m³/year)	(av ft³/3min)	(Mg/year)	(m³/year)	(av ft³/3min)	(Mg/year)	(m³/year)	(av ft³/3min)
1967	110.273	121.300	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1968	110.364	121.400	110.273	121.300	1.082E+03	8.665E+05	5.822E+01	2.890E+02	4.333E+05	2.911E+01	7.931E+02	4.333E+05	2.911E+01	2.466E+00	6.880E+02	4.623E-02
1969	110.273	121.300	220.636	242.700	2.123E+03	1.700E+06	1.142E+02	5.670E+02	8.499E+05	5.710E+01	1.556E+03	8.499E+05	5.710E+01	5.686E+00	1.350E+03	9.068E-02
1970	110.273	121.300	330.909	364.000	3.122E+03	2.500E+06	1.679E+02	8.338E+02	1.250E+06	8.397E+01	2.288E+03	1.250E+06	8.397E+01	7.114E+00	1.985E+03	1.334E-01
1971	110.364	121.400	441.182	485.300	4.081E+03	3.268E+06	2.196E+02	1.090E+03	1.634E+06	1.098E+02	2.991E+03	1.634E+06	1.098E+02	9.301E+00	2.595E+03	1.743E-01
1972	110.364	121.400	551.545	606.700	5.004E+03	4.007E+06	2.692E+02	1.337E+03	2.004E+06	1.346E+02	3.668E+03	2.004E+06	1.346E+02	1.140E+01	3.182E+03	2.138E-01
1973	110.273	121.300	661.909	728.100	5.891E+03	4.717E+06	3.170E+02	1.574E+03	2.359E+06	1.585E+02	4.317E+03	2.359E+06	1.585E+02	1.343E+01	3.745E+03	2.517E-01
1974	110.273	121.300	772.182	849.400	6.742E+03	5.399E+06	3.627E+02	1.801E+03	2.699E+06	1.814E+02	4.941E+03	2.699E+06	1.814E+02	1.537E+01	4.287E+03	2.880E-01
1975	110.364	121.400	882.455	970.700	7.560E+03	6.054E+06	4.067E+02	2.019E+03	3.027E+06	2.034E+02	5.541E+03	3.027E+06	2.034E+02	1.723E+01	4.807E+03	3.230E-01
1976	110.000	121.000	992.818	1,092.100	8.346E+03	6.683E+06	4.491E+02	2.229E+03	3.342E+06	2.245E+02	6.117E+03	3.342E+06	2.245E+02	1.902E+01	5.307E+03	3.566E-01
1977	110.909	122.000	1,102.818	1,213.100	9.099E+03	7.286E+06	4.895E+02	2.430E+03	3.643E+06	2.448E+02	6.668E+03	3.643E+06	2.448E+02	2.074E+01	5.785E+03	3.887E-01
1978	110.909	122.000	1,213.727	1,335.100	9.830E+03	7.872E+06	5.289E+02	2.626E+03	3.936E+06	2.644E+02	7.204E+03	3.936E+06	2.644E+02	2.240E+01	6.250E+03	4.199E-01
1979	110.000	121.000	1,324.636	1,457.100	1.053E+04	8.434E+06	5.667E+02	2.814E+03	4.217E+06	2.834E+02	7.720E+03	4.217E+06	2.834E+02	2.400E+01	6.697E+03	4.500E-01
1980	110.000	121.000	1,434.636	1,578.100	1.120E+04	9.968E+06	6.026E+02	2.992E+03	4.484E+06	3.013E+02	8.208E+03	4.484E+06	3.013E+02	2.552E+01	7.121E+03	4.784E-01
1981	110.909	122.000	1,544.636	1,699.100	1.184E+04	9.481E+06	6.370E+02	3.163E+03	4.740E+06	3.185E+02	8.677E+03	4.740E+06	3.185E+02	2.698E+01	7.528E+03	5.058E-01
1982	110.000	121.000	1,655.545	1,821.100	1.246E+04	9.981E+06	6.706E+02	3.329E+03	4.990E+06	3.353E+02	9.135E+03	4.990E+06	3.353E+02	2.841E+01	7.925E+03	5.324E-01
1983	110.000	121.000	1,765.545	1,942.100	1.305E+04	1.045E+07	7.024E+02	3.487E+03	5.227E+06	3.512E+02	9.568E+03	5.227E+06	3.512E+02	2.975E+01	8.300E+03	5.577E-01
1984	110.909	122.000	1,875.545	2,063.100	1.362E+04	1.091E+07	7.329E+02	3.639E+03	5.454E+06	3.665E+02	9.984E+03	5.454E+06	3.665E+02	3.104E+01	8.661E+03	5.819E-01
1985	110.000	121.000	1,986.455	2,185.100	1.418E+04	1.135E+07	7.627E+02	3.787E+03	5.676E+06	3.814E+02	1.039E+04	5.676E+06	3.814E+02	3.231E+01	9.013E+03	6.056E-01
1986	110.000	121.000	2,096.455	2,306.100	1.470E+04	1.177E+07	7.909E+02	3.927E+03	5.886E+06	3.942E+02	1.077E+04	5.886E+06	3.942E+02	3.350E+01	9.346E+03	6.280E-01
1987	110.909	122.000	2,206.455	2,427.100	1.520E+04	1.217E+07	8.180E+02	4.061E+03	6.087E+06	4.090E+02	1.114E+04	6.087E+06	4.090E+02	3.465E+01	9.666E+03	6.495E-01
1988	110.000	121.000	2,317.364	2,549.100	1.570E+04	1.257E+07	8.444E+02	4.192E+03	6.284E+06	4.222E+02	1.150E+04	6.284E+06	4.222E+02	3.577E+01	9.979E+03	6.705E-01
1989	110.000	121.000	2,427.364	2,679.100	1.616E+04	1.294E+07	8.694E+02	4.316E+03	6.470E+06	4.347E+02	1.184E+04	6.470E+06	4.347E+02	3.683E+01	1.027E+04	6.903E-01
1990	51.437	56.581	2,537.364	2,791.100	1.661E+04	1.330E+07	8.934E+02	4.435E+03	6.648E+06	4.467E+02	1.217E+04	6.648E+06	4.467E+02	3.784E+01	1.056E+04	7.094E-01
1991	71.377	78.515	2,588.804	2,847.681	1.646E+04	1.318E+07	8.855E+02	4.396E+03	6.596E+06	4.428E+02	1.206E+04	6.596E+06	4.428E+02	3.751E+01	1.046E+04	7.031E-01
1992	70.806	77.886	2,660.178	2,926.196	1.651E+04	1.322E+07	8.885E+02	4.411E+03	6.612E+06	4.442E+02	1.210E+04	6.612E+06	4.442E+02	3.763E+01	1.050E+04	7.055E-01
1993	66.713	73.384	2,730.983	3,004.082	1.656E+04	1.326E+07	8.910E+02	4.424E+03	6.631E+06	4.455E+02	1.214E+04	6.631E+06	4.455E+02	3.774E+01	1.053E+04	7.075E-01
1994	76.118	83.730	2,797.966	3,077.466	1.657E+04	1.327E+07	8.913E+02	4.425E+03	6.633E+06	4.457E+02	1.214E+04	6.633E+06	4.457E+02	3.775E+01	1.053E+04	7.077E-01
1995	95.040	104.545	2,873.814	3,161.195	1.666E+04	1.334E+07	8.966E+02	4.451E+03	6.672E+06	4.483E+02	1.221E+04	6.672E+06	4.483E+02	3.798E+01	1.059E+04	7.119E-01
1996	89.166	98.082	2,968.854	3,265.740	1.694E+04	1.357E+07	9.116E+02	4.526E+03	6.784E+06	4.558E+02	1.242E+04	6.784E+06	4.558E+02	3.861E+01	1.077E+04	7.238E-01
1997	64.707	71.178	3,058.020	3,363.822	1.715E+04	1.374E+07	9.229E+02	4.582E+03	6.868E+06	4.615E+02	1.257E+04	6.868E+06	4.615E+02	3.909E+01	1.091E+04	7.328E-01
1998	114.545	126.000	3,122.727	3,435.000	1.712E+04	1.371E+07	9.209E+02	4.572E+03	6.853E+06	4.604E+02	1.254E+04	6.853E+06	4.604E+02	3.901E+01	1.088E+04	7.312E-01
1999	146.364	161.000	3,237.273	3,561.000	1.757E+04	1.407E+07	9.453E+02	4.693E+03	7.034E+06	4.726E+02	1.288E+04	7.034E+06	4.726E+02	4.004E+01	1.117E+04	7.505E-01
2000	140.909	155.000	3,383.636	3,722.000	1.832E+04	1.467E+07	9.855E+02	4.892E+03	7.333E+06	4.927E+02	1.342E+04	7.333E+06	4.927E+02	4.174E+01	1.165E+04	7.825E-01
2001	136.364	150.000	3,524.545	3,877.000	1.898E+04	1.520E+07	1.021E+03	5.070E+03	7.599E+06	5.106E+02	1.391E+04	7.599E+06	5.106E+02	4.326E+01	1.207E+04	8.108E-01
2002	117.273	129.000	3,660.909	4,027.000	1.957E+04	1.567E+07	1.053E+03	5.229E+03	7.837E+06	5.266E+02	1.435E+04	7.837E+06	5.266E+02	4.461E+01	1.245E+04	8.362E-01
2003	121.179	133.297	3,778.182	4,156.000	1.996E+04	1.598E+07	1.074E+03	5.331E+03	7.991E+06	5.369E+02	1.463E+04	7.991E+06	5.369E+02	4.548E+01	1.269E+04	8.526E-01
2004	127.759	140.535	3,899.361	4,289.297	2.036E+04	1.631E+07	1.096E+03	5.440E+03	8.153E+06	5.478E+02	1.492E+04	8.153E+06	5.478E+02	4.641E+01	1.295E+04	8.700E-01
2005	196.775	216.452	4,027.120	4,429.832	2.082E+04	1.667E+07	1.120E+03	5.561E+03	8.336E+06	5.601E+02	1.526E+04	8.336E+06	5.601E+02	4.745E+01	1.324E+04	8.894E-01
2006	125.401	137.941	4,223.985	4,646.284	2.193E+04	1.756E+07	1.180E+03	5.859E+03	8.782E+06	5.901E+02	1.608E+04	8.782E+06	5.901E+02	4.999E+01	1.395E+04	9.370E-01
2007	201.760	221.936	4,349.296	4,784.225	2.230E+04	1.786E+07	1.200E+03	5.958E+03	8.930E+06	6.000E+02	1.635E+04	8.930E+06	6.000E+02	5.038E+01	1.418E+04	9.528E-01
2008	0	0	4.551.056	5.006.161	2.341E+04	1.875E+07	1.260E+03	6.253E+03	9.373E+06	6.298E+02	1.716E+04	9.373E+06	6.298E+02	5.335E+01	1.488E+04	1.000E+00
2009	0	0	4.551.056	5.006.161	2.249E+04	1.801E+07	1.210E+03	6.008E+03	9.005E+06	6.051E+02	1.648E+04	9.005E+06	6.051E+02	5.126E+01	1.430E+04	9.609E-01
2010	0	0	4.551.056	5.006.161	2.161E+04	1.730E+07	1.163E+03	5.772E+03	8.652E+06	5.813E+02	1.584E+04	8.652E+06	5.813E+02	4.925E+01	1.374E+04	9.232E-01
2011	0	0	4.551.056	5.006.161	2.076E+04	1.663E+07	1.117E+03	5.546E+03	8.313E+06	5.585E+02	1.522E+04	8.313E+06	5.585E+02	4.732E+01	1.320E+04	8.870E-01
2012	0	0	4.551.056	5.006.161	1.995E+04	1.597E+07	1.073E+03	5.329E+03	7.987E+06	5.366E+02	1.462E+04	7.987E+06	5.366E+02	4.546E+01	1.268E+04	8.522E-01
2013	0	0	4.551.056	5.006.161	1.917E+04	1.535E+07	1.031E+03	5.120E+03	7.674E+06	5.156E+02	1.405E+04	7.674E+06	5.156E+02	4.368E+01	1.219E+04	8.188E-01
2014	0	0	4.551.056	5.006.161	1.842E+04	1.475E+07	9.908E+02	4.919E+03	7.373E+06	4.954E+02	1.350E+04	7.373E+06	4.954E+02	4.197E+01	1.171E+04	7.867E-01
2015	0	0	4.551.056	5.006.161	1.769E+04	1.417E+07	9.519E+02	4.726E+03	7.084E+06	4.760E+02	1.197E+04	7.084E+06	4.760E+02	4.032E+01	1.125E+04	7.558E-01
2016	0	0	4.551.056	5.006.161	1.700E+04	1.361E+07	9.146E+02	4.541E+03	6.806E+06	4.573E+02	1.246E+04	6.806E+06	4.573E+02	3.874E+01	1.081E+04	7.262E-01
2017	0	0	4.551.056	5.006.161	1.633E+04	1.308E+07	8.787E+02	4.363E+03	6.539E+06	4.394E+02	1.197E+04	6.539E+06	4.394E+02	3.722E+01	1.038E+04	6.977E-01
2018	0	0	4.551.056	5.006.161	1.569E+04	1.257E+07	8.443E									

RESULTS

Landfill Name or Identifier: Smiths Creek ROP Renewal Non-Bioreactor

Closure Year (with 80-year limit) = 2007
 Methane = 50 % by volume

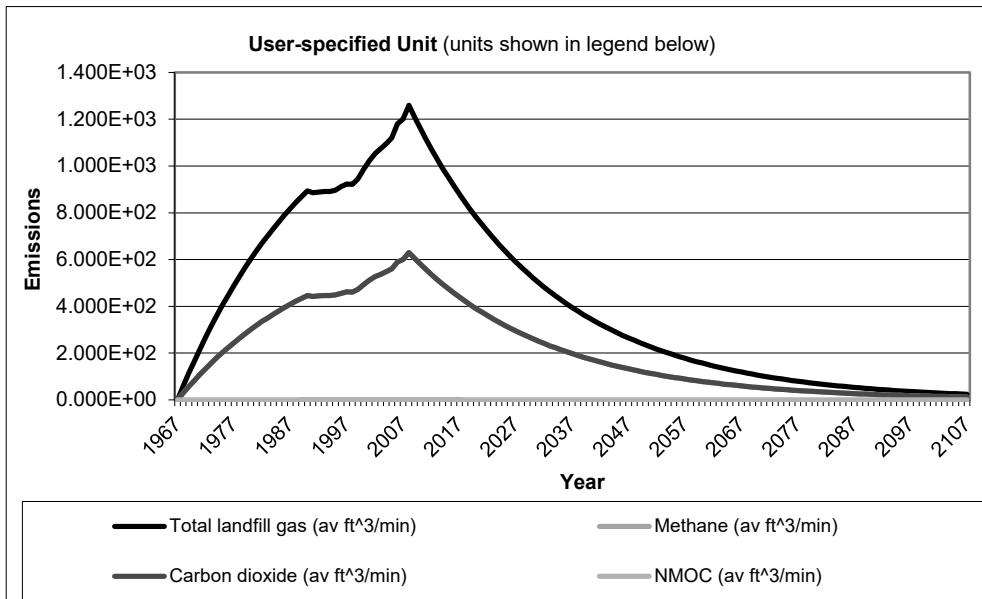
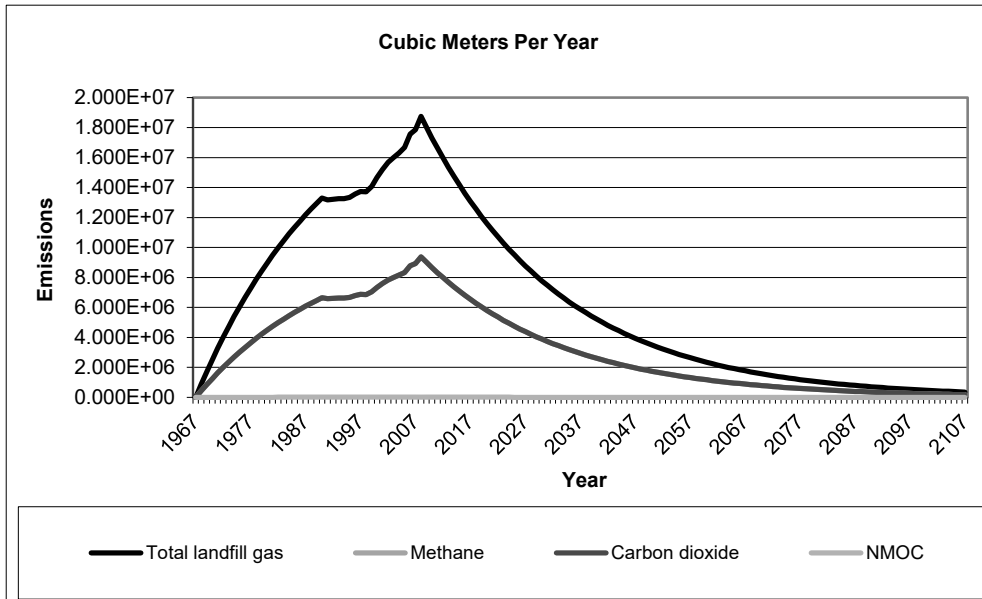
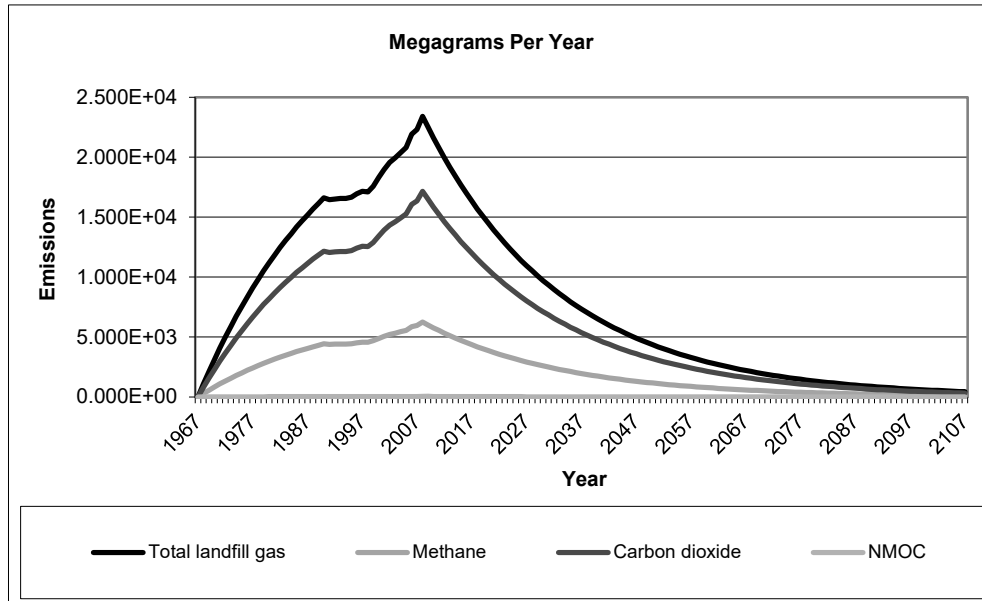
Please choose a third unit of measure to represent all of
 the emission rates below.

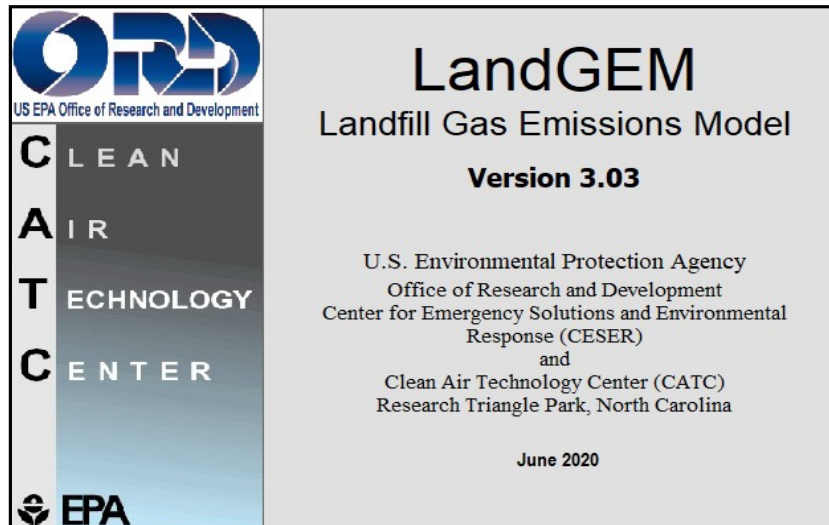
User-specified Unit:

Year	Waste Accepted		Waste-In-Place		Total landfill gas			Methane			Carbon dioxide			NMOC		
	(Mg/year)	(short tons/year)	(Mg)	(short tons)	(Mg/year)	(m³/year)	(av ft³/min)	(Mg/year)	(m³/year)	(av ft³/min)	(Mg/year)	(m³/year)	(av ft³/min)	(Mg/year)	(m³/year)	(av ft³/min)
2046	0	0	4.551056	5.006161	5.205E+03	4.100E+06	2.755E+02	1.368E+03	2.050E+06	1.377E+02	3.752E+03	2.050E+06	1.377E+02	1.167E+01	3.255E+03	2.187E-01
2047	0	0	4.551056	5.006161	4.919E+03	3.939E+06	2.647E+02	1.314E+03	1.970E+06	1.323E+02	3.605E+03	1.970E+06	1.323E+02	1.121E+01	3.128E+03	2.101E-01
2048	0	0	4.551056	5.006161	4.726E+03	3.785E+06	2.543E+02	1.262E+03	1.892E+06	1.271E+02	3.464E+03	1.892E+06	1.271E+02	1.077E+01	3.005E+03	2.019E-01
2049	0	0	4.551056	5.006161	4.541E+03	3.636E+06	2.443E+02	1.213E+03	1.818E+06	1.222E+02	3.328E+03	1.818E+06	1.222E+02	1.035E+01	2.887E+03	1.940E-01
2050	0	0	4.551056	5.006161	4.363E+03	3.494E+06	2.347E+02	1.165E+03	1.747E+06	1.174E+02	3.198E+03	1.747E+06	1.174E+02	9.943E+00	2.774E+03	1.864E-01
2051	0	0	4.551056	5.006161	4.192E+03	3.357E+06	2.255E+02	1.120E+03	1.678E+06	1.128E+02	3.072E+03	1.678E+06	1.128E+02	9.553E+00	2.665E+03	1.791E-01
2052	0	0	4.551056	5.006161	4.028E+03	3.225E+06	2.167E+02	1.076E+03	1.613E+06	1.083E+02	2.952E+03	1.613E+06	1.083E+02	9.179E+00	2.561E+03	1.721E-01
2053	0	0	4.551056	5.006161	3.870E+03	3.099E+06	2.082E+02	1.034E+03	1.549E+06	1.041E+02	2.836E+03	1.549E+06	1.041E+02	8.819E+00	2.460E+03	1.653E-01
2054	0	0	4.551056	5.006161	3.718E+03	2.977E+06	2.000E+02	9.931E+02	1.489E+06	1.000E+02	2.725E+03	1.489E+06	1.000E+02	8.473E+00	2.364E+03	1.588E-01
2055	0	0	4.551056	5.006161	3.572E+03	2.860E+06	1.922E+02	9.542E+02	1.430E+06	9.610E+01	2.618E+03	1.430E+06	9.610E+01	8.141E+00	2.271E+03	1.526E-01
2056	0	0	4.551056	5.006161	3.432E+03	2.748E+06	1.847E+02	9.167E+02	1.374E+06	9.233E+01	2.515E+03	1.374E+06	9.233E+01	7.822E+00	2.182E+03	1.466E-01
2057	0	0	4.551056	5.006161	3.298E+03	2.640E+06	1.774E+02	8.808E+02	1.320E+06	8.871E+01	2.417E+03	1.320E+06	8.871E+01	7.515E+00	2.097E+03	1.409E-01
2058	0	0	4.551056	5.006161	3.168E+03	2.537E+06	1.705E+02	8.463E+02	1.268E+06	8.523E+01	2.322E+03	1.268E+06	8.523E+01	7.220E+00	2.014E+03	1.353E-01
2059	0	0	4.551056	5.006161	3.044E+03	2.437E+06	1.638E+02	8.131E+02	1.219E+06	8.189E+01	2.231E+03	1.219E+06	8.189E+01	6.937E+00	1.935E+03	1.300E-01
2060	0	0	4.551056	5.006161	2.925E+03	2.342E+06	1.574E+02	7.812E+02	1.171E+06	7.868E+01	2.143E+03	1.171E+06	7.868E+01	6.665E+00	1.859E+03	1.249E-01
2061	0	0	4.551056	5.006161	2.810E+03	2.250E+06	1.512E+02	7.506E+02	1.125E+06	7.559E+01	2.059E+03	1.125E+06	7.559E+01	6.404E+00	1.787E+03	1.200E-01
2062	0	0	4.551056	5.006161	2.700E+03	2.162E+06	1.453E+02	7.211E+02	1.081E+06	7.263E+01	1.979E+03	1.081E+06	7.263E+01	6.153E+00	1.717E+03	1.153E-01
2063	0	0	4.551056	5.006161	2.594E+03	2.077E+06	1.396E+02	6.929E+02	1.039E+06	6.978E+01	1.901E+03	1.039E+06	6.978E+01	5.912E+00	1.649E+03	1.108E-01
2064	0	0	4.551056	5.006161	2.492E+03	1.996E+06	1.341E+02	6.657E+02	9.978E+05	6.704E+01	1.827E+03	9.978E+05	6.704E+01	5.680E+00	1.585E+03	1.065E-01
2065	0	0	4.551056	5.006161	2.394E+03	1.917E+06	1.288E+02	6.396E+02	9.587E+05	6.441E+01	1.755E+03	9.587E+05	6.441E+01	5.457E+00	1.522E+03	1.023E-01
2066	0	0	4.551056	5.006161	2.301E+03	1.842E+06	1.238E+02	6.145E+02	9.211E+05	6.189E+01	1.686E+03	9.211E+05	6.189E+01	5.243E+00	1.463E+03	9.828E-02
2067	0	0	4.551056	5.006161	2.210E+03	1.770E+06	1.189E+02	5.904E+02	8.850E+05	5.946E+01	1.620E+03	8.850E+05	5.946E+01	5.037E+00	1.405E+03	9.443E-02
2068	0	0	4.551056	5.006161	2.124E+03	1.701E+06	1.143E+02	5.673E+02	8.503E+05	5.713E+01	1.556E+03	8.503E+05	5.713E+01	4.840E+00	1.350E+03	9.072E-02
2069	0	0	4.551056	5.006161	2.040E+03	1.634E+06	1.098E+02	5.450E+02	8.169E+05	5.489E+01	1.495E+03	8.169E+05	5.489E+01	4.650E+00	1.297E+03	8.717E-02
2070	0	0	4.551056	5.006161	1.960E+03	1.570E+06	1.055E+02	5.237E+02	7.849E+05	5.274E+01	1.437E+03	7.849E+05	5.274E+01	4.460E+00	1.246E+03	8.375E-02
2071	0	0	4.551056	5.006161	1.884E+03	1.508E+06	1.013E+02	5.031E+02	7.541E+05	5.067E+01	1.380E+03	7.541E+05	5.067E+01	4.293E+00	1.198E+03	8.046E-02
2072	0	0	4.551056	5.006161	1.810E+03	1.449E+06	9.737E+01	4.834E+02	7.246E+05	4.868E+01	1.326E+03	7.246E+05	4.868E+01	4.124E+00	1.151E+03	7.731E-02
2073	0	0	4.551056	5.006161	1.739E+03	1.392E+06	9.355E+01	4.644E+02	6.962E+05	4.677E+01	1.274E+03	6.962E+05	4.677E+01	3.963E+00	1.105E+03	7.428E-02
2074	0	0	4.551056	5.006161	1.671E+03	1.338E+06	8.988E+01	4.462E+02	6.689E+05	4.494E+01	1.224E+03	6.689E+05	4.494E+01	3.807E+00	1.062E+03	7.137E-02
2075	0	0	4.551056	5.006161	1.605E+03	1.285E+06	8.636E+01	4.287E+02	6.426E+05	4.318E+01	1.176E+03	6.426E+05	4.318E+01	3.658E+00	1.021E+03	6.857E-02
2076	0	0	4.551056	5.006161	1.542E+03	1.235E+06	8.297E+01	4.119E+02	6.174E+05	4.149E+01	1.130E+03	6.174E+05	4.149E+01	3.580E+00	9.805E+02	6.588E-02
2077	0	0	4.551056	5.006161	1.482E+03	1.186E+06	7.972E+01	3.958E+02	5.932E+05	3.986E+01	1.086E+03	5.932E+05	3.986E+01	3.377E+00	9.420E+02	6.330E-02
2078	0	0	4.551056	5.006161	1.424E+03	1.140E+06	7.659E+01	3.803E+02	5.700E+05	3.830E+01	1.043E+03	5.700E+05	3.830E+01	3.244E+00	9.051E+02	6.081E-02
2079	0	0	4.551056	5.006161	1.368E+03	1.095E+06	7.359E+01	3.653E+02	5.476E+05	3.679E+01	1.002E+03	5.476E+05	3.679E+01	3.117E+00	8.696E+02	5.843E-02
2080	0	0	4.551056	5.006161	1.314E+03	1.052E+06	7.070E+01	3.510E+02	5.261E+05	3.535E+01	9.631E+02	5.261E+05	3.535E+01	2.995E+00	8.355E+02	5.614E-02
2081	0	0	4.551056	5.006161	1.263E+03	1.011E+06	6.793E+01	3.373E+02	5.055E+05	3.397E+01	9.253E+02	5.055E+05	3.397E+01	2.877E+00	8.028E+02	5.394E-02
2082	0	0	4.551056	5.006161	1.213E+03	9.714E+05	6.527E+01	3.240E+02	4.857E+05	3.263E+01	8.891E+02	4.857E+05	3.263E+01	2.765E+00	7.713E+02	5.182E-02
2083	0	0	4.551056	5.006161	1.166E+03	9.333E+05	6.271E+01	3.113E+02	4.666E+05	3.135E+01	8.542E+02	4.666E+05	3.135E+01	2.656E+00	7.410E+02	4.979E-02
2084	0	0	4.551056	5.006161	1.120E+03	8.967E+05	6.025E+01	2.991E+02	4.484E+05	3.012E+01	8.207E+02	4.484E+05	3.012E+01	2.552E+00	7.120E+02	4.784E-02
2085	0	0	4.551056	5.006161	1.076E+03	8.615E+05	5.789E+01	2.874E+02	4.308E+05	2.894E+01	7.885E+02	4.308E+05	2.894E+01	2.452E+00	6.841E+02	4.596E-02
2086	0	0	4.551056	5.006161	1.034E+03	8.278E+05	5.562E+01	2.761E+02	4.139E+05	2.781E+01	7.576E+02	4.139E+05	2.781E+01	2.356E+00	6.572E+02	4.416E-02
2087	0	0	4.551056	5.006161	9.932E+02	7.953E+05	5.344E+01	2.653E+02	3.977E+05	2.672E+01	7.279E+02	3.977E+05	2.672E+01	2.263E+00	6.315E+02	4.243E-02
2088	0	0	4.551056	5.006161	9.542E+02	7.641E+05	5.134E+01	2.549E+02	3.821E+05	2.567E+01	6.994E+02	3.821E+05	2.567E+01	2.175E+00	6.067E+02	4.076E-02
2089	0	0	4.551056	5.006161	9.168E+02	7.342E+05	4.933E+01	2.449E+02	3.671E+05	2.466E+01	6.719E+02	3.671E+05	2.466E+01	2.089E+00	5.829E+02	3.917E-02
2090	0	0	4.551056	5.006161	8.809E+02	7.054E+05	4.739E+01	2.353E+02	3.527E+05	2.370E+01	6.456E+02	3.527E+05	2.370E+01	2.008E+00	5.601E+02	3.763E-02
2091	0	0	4.551056	5.006161	8.463E+02	6.777E+05	4.554E+01	2.261E+02	3.389E+05	2.277E+01	6.203E+02	3.389E+05	2.277E+01	1.929E+00	5.381E+02	3.616E-02
2092	0	0	4.551056	5.006161	8.132E+02	6.511E+05	4.375E+01	2.172E+02	3.258E+05	2.187E+01	5.960E+02	3.258E+05	2.187E+01	1.853E+00	5.170E+02	3.474E-02
2093	0	0	4.551056	5.006161	7.813E+02	6.256E+05	4.203E+01	2.087E+02	3.128E+05	2.102E+01	5.726E+02	3.128E+05	2.102E+01	1.781E+00	4.967E+02	3.338E-02
2094	0	0	4.551056	5.006161	7.506E+02	6.011E+05	4.039E+01	2.005E+02	3.005E+05	2.019E+01	5.501E+02	3.005E+05	2.019E+01	1.711E+00	4.773E+02	3.207E-02
2095	0	0	4.551056	5.006161	7.212E+02	5.775E+05	3.880E+01	1.926E+02	2.888E+05	1.940E+01	5.286E+02	2.888E+05	1.940E+01	1.644E+00	4.585E+02	3.081E-02
2096	0	0	4.551056	5.006161	6.929E+02	5.549E+05	3.728E+01	1.851E+02	2.774E+05	1.864E+01	5.078E+02	2.774E+05	1.864E+01	1.579E+00	4.406E+02	2.960E-02
2097	0	0	4.551056	5.006161	6.658E+02	5.331E+05	3.582E+01	1.778E+02	2.666E+05	1.791E+01	4.879E+02	2.666E+05	1.791E+01	1.517E+00	4.233E+02	2.844E-02
2098	0	0	4.551056	5.006161	6.397E+02	5.122E+05	3.441E+01	1.709E+02	2.561E+05	1.721E+01	4.688E+02	2.561E+05	1.721E+01	1.458E+00	4.067E+02	2.733E-02
2099	0	0	4.551056	5.006161	6.146E+02	4.921E+05	3.307E+01	1.642E+02	2.461E+05							

GRAPHS

Landfill Name or Identifier: Smiths Creek ROP Renewal Non-Bioreactor





Summary Report

Landfill Name or Identifier: Smiths Creek ROP Renewal Non-Bioreactor

Date: Wednesday, November 16, 2022

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:
$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 kL_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

n = (year of the calculation) - (initial year of waste acceptance)

j = 0.1-year time increment

k = methane generation rate ($year^{-1}$)

L_o = potential methane generation capacity (m^3/Mg)

M_i = mass of waste accepted in the i^{th} year (Mg)

t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	1967	
Landfill Closure Year (with 80-year limit)	2007	
Actual Closure Year (without limit)	2007	
Have Model Calculate Closure Year?	No	
Waste Design Capacity		<i>megagrams</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.040	<i>year⁻¹</i>
Potential Methane Generation Capacity, L ₀	100	<i>m³/Mg</i>
NMOC Concentration	794	<i>ppmv as hexane</i>
Methane Content	50	<i>% by volume</i>

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1967	110,273	121,300	0	0
1968	110,364	121,400	110,273	121,300
1969	110,273	121,300	220,636	242,700
1970	110,273	121,300	330,909	364,000
1971	110,364	121,400	441,182	485,300
1972	110,364	121,400	551,545	606,700
1973	110,273	121,300	661,909	728,100
1974	110,273	121,300	772,182	849,400
1975	110,364	121,400	882,455	970,700
1976	110,000	121,000	992,818	1,092,100
1977	110,909	122,000	1,102,818	1,213,100
1978	110,909	122,000	1,213,727	1,335,100
1979	110,000	121,000	1,324,636	1,457,100
1980	110,000	121,000	1,434,636	1,578,100
1981	110,909	122,000	1,544,636	1,699,100
1982	110,000	121,000	1,655,545	1,821,100
1983	110,000	121,000	1,765,545	1,942,100
1984	110,909	122,000	1,875,545	2,063,100
1985	110,000	121,000	1,986,455	2,185,100
1986	110,000	121,000	2,096,455	2,306,100
1987	110,909	122,000	2,206,455	2,427,100
1988	110,000	121,000	2,317,364	2,549,100
1989	110,000	121,000	2,427,364	2,670,100
1990	51,437	56,581	2,537,364	2,791,100
1991	71,377	78,515	2,588,801	2,847,681
1992	70,806	77,886	2,660,178	2,926,196
1993	66,713	73,384	2,730,983	3,004,082
1994	76,118	83,730	2,797,696	3,077,466
1995	95,040	104,545	2,873,814	3,161,195
1996	89,166	98,082	2,968,854	3,265,740
1997	64,707	71,178	3,058,020	3,363,822
1998	114,545	126,000	3,122,727	3,435,000
1999	146,364	161,000	3,237,273	3,561,000
2000	140,909	155,000	3,383,636	3,722,000
2001	136,364	150,000	3,524,545	3,877,000
2002	117,273	129,000	3,660,909	4,027,000
2003	121,179	133,297	3,778,182	4,156,000
2004	127,759	140,535	3,899,361	4,289,297
2005	196,775	216,452	4,027,120	4,429,832
2006	125,401	137,941	4,223,895	4,646,284

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2007	201,760	221,936	4,349,296	4,784,225
2008	0	0	4,551,056	5,006,161
2009	0	0	4,551,056	5,006,161
2010	0	0	4,551,056	5,006,161
2011	0	0	4,551,056	5,006,161
2012	0	0	4,551,056	5,006,161
2013	0	0	4,551,056	5,006,161
2014	0	0	4,551,056	5,006,161
2015	0	0	4,551,056	5,006,161
2016	0	0	4,551,056	5,006,161
2017	0	0	4,551,056	5,006,161
2018	0	0	4,551,056	5,006,161
2019	0	0	4,551,056	5,006,161
2020	0	0	4,551,056	5,006,161
2021	0	0	4,551,056	5,006,161
2022	0	0	4,551,056	5,006,161
2023	0	0	4,551,056	5,006,161
2024	0	0	4,551,056	5,006,161
2025	0	0	4,551,056	5,006,161
2026	0	0	4,551,056	5,006,161
2027	0	0	4,551,056	5,006,161
2028	0	0	4,551,056	5,006,161
2029	0	0	4,551,056	5,006,161
2030	0	0	4,551,056	5,006,161
2031	0	0	4,551,056	5,006,161
2032	0	0	4,551,056	5,006,161
2033	0	0	4,551,056	5,006,161
2034	0	0	4,551,056	5,006,161
2035	0	0	4,551,056	5,006,161
2036	0	0	4,551,056	5,006,161
2037	0	0	4,551,056	5,006,161
2038	0	0	4,551,056	5,006,161
2039	0	0	4,551,056	5,006,161
2040	0	0	4,551,056	5,006,161
2041	0	0	4,551,056	5,006,161
2042	0	0	4,551,056	5,006,161
2043	0	0	4,551,056	5,006,161
2044	0	0	4,551,056	5,006,161
2045	0	0	4,551,056	5,006,161
2046	0	0	4,551,056	5,006,161

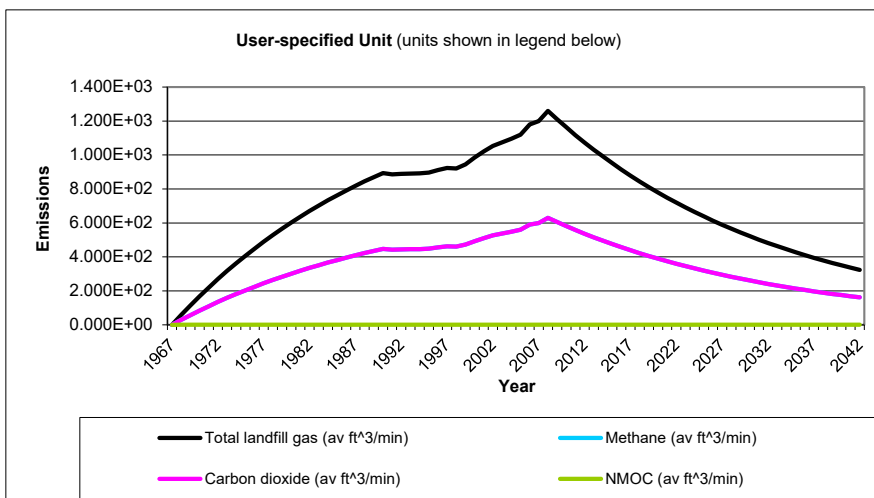
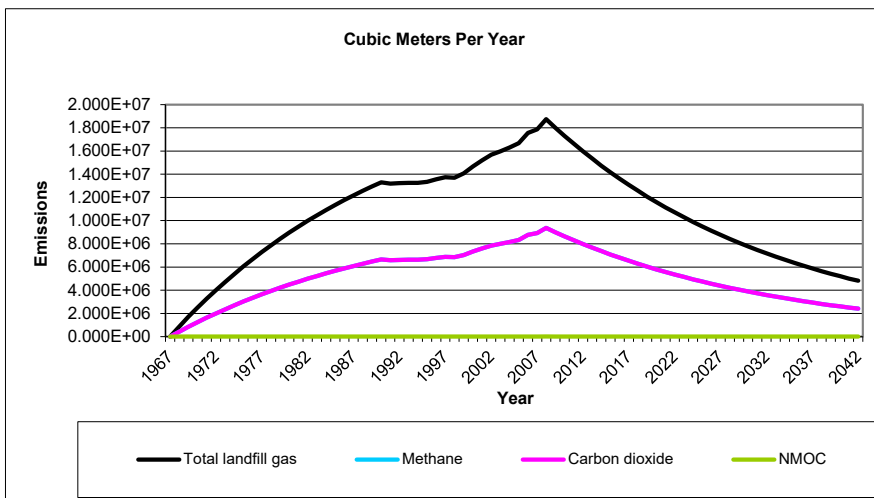
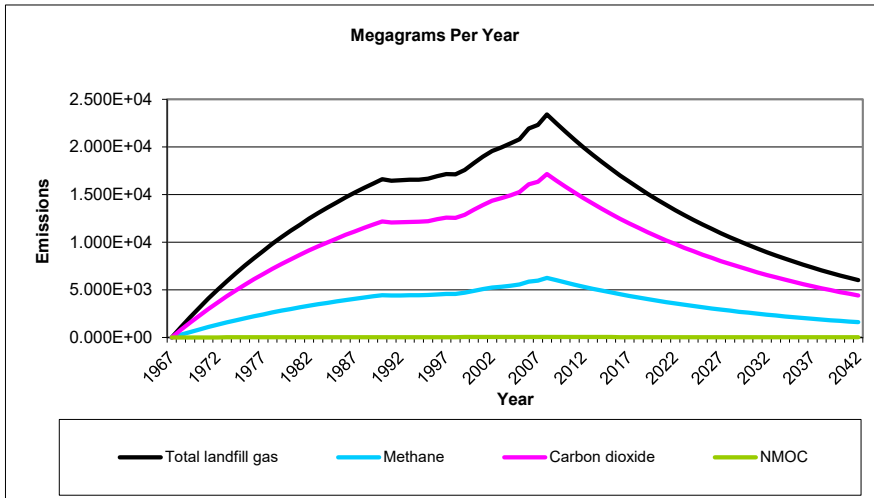
Pollutant Parameters

Gas / Pollutant Default Parameters:				User-specified Pollutant Parameters:	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,2,2- Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

Pollutant Parameters (Continued)

<i>Gas / Pollutant Default Parameters:</i>				<i>User-specified Pollutant Parameters:</i>	
	Compound	Concentration (ppmv)	Molecular Weight	Concentration (ppmv)	Molecular Weight
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13		
	Ethylbenzene - HAP/VOC	4.6	106.16		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88		
	Fluorotrichloromethane - VOC	0.76	137.38		
	Hexane - HAP/VOC	6.6	86.18		
	Hydrogen sulfide	36	34.08		
	Mercury (total) - HAP	2.9E-04	200.61		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16		
	Methyl mercaptan - VOC	2.5	48.11		
	Pentane - VOC	3.3	72.15		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83		
	Propane - VOC	11	44.09		
	t-1,2-Dichloroethene - VOC	2.8	96.94		
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13		
	Toluene - Co-disposal - HAP/VOC	170	92.13		
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40		
	Vinyl chloride - HAP/VOC	7.3	62.50		
	Xylenes - HAP/VOC	12	106.16		

Graphs



Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1967	0	0	0	0	0	0
1968	1.082E+03	8.665E+05	5.822E+01	2.890E+02	4.333E+05	2.911E+01
1969	2.123E+03	1.700E+06	1.142E+02	5.670E+02	8.499E+05	5.710E+01
1970	3.122E+03	2.500E+06	1.679E+02	8.338E+02	1.250E+06	8.397E+01
1971	4.081E+03	3.268E+06	2.196E+02	1.090E+03	1.634E+06	1.098E+02
1972	5.004E+03	4.007E+06	2.692E+02	1.337E+03	2.004E+06	1.346E+02
1973	5.891E+03	4.717E+06	3.170E+02	1.574E+03	2.359E+06	1.585E+02
1974	6.742E+03	5.399E+06	3.627E+02	1.801E+03	2.699E+06	1.814E+02
1975	7.560E+03	6.054E+06	4.067E+02	2.019E+03	3.027E+06	2.034E+02
1976	8.346E+03	6.683E+06	4.491E+02	2.229E+03	3.342E+06	2.245E+02
1977	9.099E+03	7.286E+06	4.895E+02	2.430E+03	3.643E+06	2.448E+02
1978	9.830E+03	7.872E+06	5.289E+02	2.626E+03	3.936E+06	2.644E+02
1979	1.053E+04	8.434E+06	5.667E+02	2.814E+03	4.217E+06	2.834E+02
1980	1.120E+04	8.968E+06	6.026E+02	2.992E+03	4.484E+06	3.013E+02
1981	1.184E+04	9.481E+06	6.370E+02	3.163E+03	4.740E+06	3.185E+02
1982	1.246E+04	9.981E+06	6.706E+02	3.329E+03	4.990E+06	3.353E+02
1983	1.305E+04	1.045E+07	7.024E+02	3.487E+03	5.227E+06	3.512E+02
1984	1.362E+04	1.091E+07	7.329E+02	3.639E+03	5.454E+06	3.665E+02
1985	1.418E+04	1.135E+07	7.627E+02	3.787E+03	5.676E+06	3.814E+02
1986	1.470E+04	1.177E+07	7.909E+02	3.927E+03	5.886E+06	3.954E+02
1987	1.520E+04	1.217E+07	8.180E+02	4.061E+03	6.087E+06	4.090E+02
1988	1.570E+04	1.257E+07	8.444E+02	4.192E+03	6.284E+06	4.222E+02
1989	1.616E+04	1.294E+07	8.694E+02	4.316E+03	6.470E+06	4.347E+02
1990	1.661E+04	1.330E+07	8.934E+02	4.435E+03	6.648E+06	4.467E+02
1991	1.646E+04	1.318E+07	8.855E+02	4.396E+03	6.590E+06	4.428E+02
1992	1.651E+04	1.322E+07	8.885E+02	4.411E+03	6.612E+06	4.442E+02
1993	1.656E+04	1.326E+07	8.910E+02	4.424E+03	6.631E+06	4.455E+02
1994	1.657E+04	1.327E+07	8.913E+02	4.425E+03	6.633E+06	4.457E+02
1995	1.666E+04	1.334E+07	8.966E+02	4.451E+03	6.672E+06	4.483E+02
1996	1.694E+04	1.357E+07	9.116E+02	4.526E+03	6.784E+06	4.558E+02
1997	1.715E+04	1.374E+07	9.229E+02	4.582E+03	6.868E+06	4.615E+02
1998	1.712E+04	1.371E+07	9.209E+02	4.572E+03	6.853E+06	4.604E+02
1999	1.757E+04	1.407E+07	9.453E+02	4.693E+03	7.034E+06	4.726E+02
2000	1.832E+04	1.467E+07	9.855E+02	4.892E+03	7.333E+06	4.927E+02
2001	1.898E+04	1.520E+07	1.021E+03	5.070E+03	7.599E+06	5.106E+02
2002	1.957E+04	1.567E+07	1.053E+03	5.229E+03	7.837E+06	5.266E+02
2003	1.996E+04	1.598E+07	1.074E+03	5.331E+03	7.991E+06	5.369E+02
2004	2.036E+04	1.631E+07	1.096E+03	5.440E+03	8.153E+06	5.478E+02
2005	2.082E+04	1.667E+07	1.120E+03	5.561E+03	8.336E+06	5.601E+02
2006	2.193E+04	1.756E+07	1.180E+03	5.859E+03	8.782E+06	5.901E+02
2007	2.230E+04	1.786E+07	1.200E+03	5.958E+03	8.930E+06	6.000E+02
2008	2.341E+04	1.875E+07	1.260E+03	6.253E+03	9.373E+06	6.298E+02
2009	2.249E+04	1.801E+07	1.210E+03	6.008E+03	9.005E+06	6.051E+02
2010	2.161E+04	1.730E+07	1.163E+03	5.772E+03	8.652E+06	5.813E+02
2011	2.076E+04	1.663E+07	1.117E+03	5.546E+03	8.313E+06	5.585E+02
2012	1.995E+04	1.597E+07	1.073E+03	5.329E+03	7.987E+06	5.366E+02
2013	1.917E+04	1.535E+07	1.031E+03	5.120E+03	7.674E+06	5.156E+02
2014	1.842E+04	1.475E+07	9.908E+02	4.919E+03	7.373E+06	4.954E+02
2015	1.769E+04	1.417E+07	9.519E+02	4.726E+03	7.084E+06	4.760E+02
2016	1.700E+04	1.361E+07	9.146E+02	4.541E+03	6.806E+06	4.573E+02

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2017	1.633E+04	1.308E+07	8.787E+02	4.363E+03	6.539E+06	4.394E+02
2018	1.569E+04	1.257E+07	8.443E+02	4.192E+03	6.283E+06	4.221E+02
2019	1.508E+04	1.207E+07	8.112E+02	4.027E+03	6.036E+06	4.056E+02
2020	1.449E+04	1.160E+07	7.794E+02	3.869E+03	5.800E+06	3.897E+02
2021	1.392E+04	1.114E+07	7.488E+02	3.718E+03	5.572E+06	3.744E+02
2022	1.337E+04	1.071E+07	7.195E+02	3.572E+03	5.354E+06	3.597E+02
2023	1.285E+04	1.029E+07	6.912E+02	3.432E+03	5.144E+06	3.456E+02
2024	1.234E+04	9.884E+06	6.641E+02	3.297E+03	4.942E+06	3.321E+02
2025	1.186E+04	9.497E+06	6.381E+02	3.168E+03	4.748E+06	3.190E+02
2026	1.139E+04	9.125E+06	6.131E+02	3.044E+03	4.562E+06	3.065E+02
2027	1.095E+04	8.767E+06	5.890E+02	2.924E+03	4.383E+06	2.945E+02
2028	1.052E+04	8.423E+06	5.659E+02	2.810E+03	4.212E+06	2.830E+02
2029	1.011E+04	8.093E+06	5.438E+02	2.700E+03	4.046E+06	2.719E+02
2030	9.710E+03	7.775E+06	5.224E+02	2.594E+03	3.888E+06	2.612E+02
2031	9.329E+03	7.471E+06	5.019E+02	2.492E+03	3.735E+06	2.510E+02
2032	8.964E+03	7.178E+06	4.823E+02	2.394E+03	3.589E+06	2.411E+02
2033	8.612E+03	6.896E+06	4.634E+02	2.300E+03	3.448E+06	2.317E+02
2034	8.274E+03	6.626E+06	4.452E+02	2.210E+03	3.313E+06	2.226E+02
2035	7.950E+03	6.366E+06	4.277E+02	2.124E+03	3.183E+06	2.139E+02
2036	7.638E+03	6.116E+06	4.110E+02	2.040E+03	3.058E+06	2.055E+02
2037	7.339E+03	5.877E+06	3.948E+02	1.960E+03	2.938E+06	1.974E+02
2038	7.051E+03	5.646E+06	3.794E+02	1.883E+03	2.823E+06	1.897E+02
2039	6.775E+03	5.425E+06	3.645E+02	1.810E+03	2.712E+06	1.822E+02
2040	6.509E+03	5.212E+06	3.502E+02	1.739E+03	2.606E+06	1.751E+02
2041	6.254E+03	5.008E+06	3.365E+02	1.670E+03	2.504E+06	1.682E+02
2042	6.008E+03	4.811E+06	3.233E+02	1.605E+03	2.406E+06	1.616E+02
2043	5.773E+03	4.623E+06	3.106E+02	1.542E+03	2.311E+06	1.553E+02
2044	5.547E+03	4.441E+06	2.984E+02	1.482E+03	2.221E+06	1.492E+02
2045	5.329E+03	4.267E+06	2.867E+02	1.423E+03	2.134E+06	1.434E+02
2046	5.120E+03	4.100E+06	2.755E+02	1.368E+03	2.050E+06	1.377E+02
2047	4.919E+03	3.939E+06	2.647E+02	1.314E+03	1.970E+06	1.323E+02
2048	4.726E+03	3.785E+06	2.543E+02	1.262E+03	1.892E+06	1.271E+02
2049	4.541E+03	3.636E+06	2.443E+02	1.213E+03	1.818E+06	1.222E+02
2050	4.363E+03	3.494E+06	2.347E+02	1.165E+03	1.747E+06	1.174E+02
2051	4.192E+03	3.357E+06	2.255E+02	1.120E+03	1.678E+06	1.128E+02
2052	4.028E+03	3.225E+06	2.167E+02	1.076E+03	1.613E+06	1.083E+02
2053	3.870E+03	3.099E+06	2.082E+02	1.034E+03	1.549E+06	1.041E+02
2054	3.718E+03	2.977E+06	2.000E+02	9.931E+02	1.489E+06	1.000E+02
2055	3.572E+03	2.860E+06	1.922E+02	9.542E+02	1.430E+06	9.610E+01
2056	3.432E+03	2.748E+06	1.847E+02	9.167E+02	1.374E+06	9.233E+01
2057	3.298E+03	2.640E+06	1.774E+02	8.808E+02	1.320E+06	8.871E+01
2058	3.168E+03	2.537E+06	1.705E+02	8.463E+02	1.268E+06	8.523E+01
2059	3.044E+03	2.437E+06	1.638E+02	8.131E+02	1.219E+06	8.189E+01
2060	2.925E+03	2.342E+06	1.574E+02	7.812E+02	1.171E+06	7.868E+01
2061	2.810E+03	2.250E+06	1.512E+02	7.506E+02	1.125E+06	7.559E+01
2062	2.700E+03	2.162E+06	1.453E+02	7.211E+02	1.081E+06	7.263E+01
2063	2.594E+03	2.077E+06	1.396E+02	6.929E+02	1.039E+06	6.978E+01
2064	2.492E+03	1.996E+06	1.341E+02	6.657E+02	9.978E+05	6.704E+01
2065	2.394E+03	1.917E+06	1.288E+02	6.396E+02	9.587E+05	6.441E+01
2066	2.301E+03	1.842E+06	1.238E+02	6.145E+02	9.211E+05	6.189E+01
2067	2.210E+03	1.770E+06	1.189E+02	5.904E+02	8.850E+05	5.946E+01

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2068	2.124E+03	1.701E+06	1.143E+02	5.673E+02	8.503E+05	5.713E+01
2069	2.040E+03	1.634E+06	1.098E+02	5.450E+02	8.169E+05	5.489E+01
2070	1.960E+03	1.570E+06	1.055E+02	5.237E+02	7.849E+05	5.274E+01
2071	1.884E+03	1.508E+06	1.013E+02	5.031E+02	7.541E+05	5.067E+01
2072	1.810E+03	1.449E+06	9.737E+01	4.834E+02	7.246E+05	4.868E+01
2073	1.739E+03	1.392E+06	9.355E+01	4.644E+02	6.962E+05	4.677E+01
2074	1.671E+03	1.338E+06	8.988E+01	4.462E+02	6.689E+05	4.494E+01
2075	1.605E+03	1.285E+06	8.636E+01	4.287E+02	6.426E+05	4.318E+01
2076	1.542E+03	1.235E+06	8.297E+01	4.119E+02	6.174E+05	4.149E+01
2077	1.482E+03	1.186E+06	7.972E+01	3.958E+02	5.932E+05	3.986E+01
2078	1.424E+03	1.140E+06	7.659E+01	3.803E+02	5.700E+05	3.830E+01
2079	1.368E+03	1.095E+06	7.359E+01	3.653E+02	5.476E+05	3.679E+01
2080	1.314E+03	1.052E+06	7.070E+01	3.510E+02	5.261E+05	3.535E+01
2081	1.263E+03	1.011E+06	6.793E+01	3.373E+02	5.055E+05	3.397E+01
2082	1.213E+03	9.714E+05	6.527E+01	3.240E+02	4.857E+05	3.263E+01
2083	1.166E+03	9.333E+05	6.271E+01	3.113E+02	4.666E+05	3.135E+01
2084	1.120E+03	8.967E+05	6.025E+01	2.991E+02	4.484E+05	3.012E+01
2085	1.076E+03	8.615E+05	5.789E+01	2.874E+02	4.308E+05	2.894E+01
2086	1.034E+03	8.278E+05	5.562E+01	2.761E+02	4.139E+05	2.781E+01
2087	9.932E+02	7.953E+05	5.344E+01	2.653E+02	3.977E+05	2.672E+01
2088	9.542E+02	7.641E+05	5.134E+01	2.549E+02	3.821E+05	2.567E+01
2089	9.168E+02	7.342E+05	4.933E+01	2.449E+02	3.671E+05	2.466E+01
2090	8.809E+02	7.054E+05	4.739E+01	2.353E+02	3.527E+05	2.370E+01
2091	8.463E+02	6.777E+05	4.554E+01	2.261E+02	3.389E+05	2.277E+01
2092	8.132E+02	6.511E+05	4.375E+01	2.172E+02	3.256E+05	2.187E+01
2093	7.813E+02	6.256E+05	4.203E+01	2.087E+02	3.128E+05	2.102E+01
2094	7.506E+02	6.011E+05	4.039E+01	2.005E+02	3.005E+05	2.019E+01
2095	7.212E+02	5.775E+05	3.880E+01	1.926E+02	2.888E+05	1.940E+01
2096	6.929E+02	5.549E+05	3.728E+01	1.851E+02	2.774E+05	1.864E+01
2097	6.658E+02	5.331E+05	3.582E+01	1.778E+02	2.666E+05	1.791E+01
2098	6.397E+02	5.122E+05	3.441E+01	1.709E+02	2.561E+05	1.721E+01
2099	6.146E+02	4.921E+05	3.307E+01	1.642E+02	2.461E+05	1.653E+01
2100	5.905E+02	4.728E+05	3.177E+01	1.577E+02	2.364E+05	1.588E+01
2101	5.673E+02	4.543E+05	3.052E+01	1.515E+02	2.271E+05	1.526E+01
2102	5.451E+02	4.365E+05	2.933E+01	1.456E+02	2.182E+05	1.466E+01
2103	5.237E+02	4.194E+05	2.818E+01	1.399E+02	2.097E+05	1.409E+01
2104	5.032E+02	4.029E+05	2.707E+01	1.344E+02	2.015E+05	1.354E+01
2105	4.834E+02	3.871E+05	2.601E+01	1.291E+02	1.936E+05	1.301E+01
2106	4.645E+02	3.719E+05	2.499E+01	1.241E+02	1.860E+05	1.250E+01
2107	4.463E+02	3.574E+05	2.401E+01	1.192E+02	1.787E+05	1.201E+01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1967	0	0	0	0	0	0
1968	7.931E+02	4.333E+05	2.911E+01	2.466E+00	6.880E+02	4.623E-02
1969	1.556E+03	8.499E+05	5.710E+01	4.838E+00	1.350E+03	9.068E-02
1970	2.288E+03	1.250E+06	8.397E+01	7.114E+00	1.985E+03	1.334E-01
1971	2.991E+03	1.634E+06	1.098E+02	9.301E+00	2.595E+03	1.743E-01
1972	3.668E+03	2.004E+06	1.346E+02	1.140E+01	3.182E+03	2.138E-01
1973	4.317E+03	2.359E+06	1.585E+02	1.343E+01	3.745E+03	2.517E-01
1974	4.941E+03	2.699E+06	1.814E+02	1.537E+01	4.287E+03	2.880E-01
1975	5.541E+03	3.027E+06	2.034E+02	1.723E+01	4.807E+03	3.230E-01
1976	6.117E+03	3.342E+06	2.245E+02	1.902E+01	5.307E+03	3.566E-01
1977	6.668E+03	3.643E+06	2.448E+02	2.074E+01	5.785E+03	3.887E-01
1978	7.204E+03	3.936E+06	2.644E+02	2.240E+01	6.250E+03	4.199E-01
1979	7.720E+03	4.217E+06	2.834E+02	2.400E+01	6.697E+03	4.500E-01
1980	8.208E+03	4.484E+06	3.013E+02	2.552E+01	7.121E+03	4.784E-01
1981	8.677E+03	4.740E+06	3.185E+02	2.698E+01	7.528E+03	5.058E-01
1982	9.135E+03	4.990E+06	3.353E+02	2.841E+01	7.925E+03	5.324E-01
1983	9.568E+03	5.227E+06	3.512E+02	2.975E+01	8.300E+03	5.577E-01
1984	9.984E+03	5.454E+06	3.665E+02	3.104E+01	8.661E+03	5.819E-01
1985	1.039E+04	5.676E+06	3.814E+02	3.231E+01	9.013E+03	6.056E-01
1986	1.077E+04	5.886E+06	3.954E+02	3.350E+01	9.346E+03	6.280E-01
1987	1.114E+04	6.087E+06	4.090E+02	3.465E+01	9.666E+03	6.495E-01
1988	1.150E+04	6.284E+06	4.222E+02	3.577E+01	9.979E+03	6.705E-01
1989	1.184E+04	6.470E+06	4.347E+02	3.683E+01	1.027E+04	6.903E-01
1990	1.217E+04	6.648E+06	4.467E+02	3.784E+01	1.056E+04	7.094E-01
1991	1.206E+04	6.590E+06	4.428E+02	3.751E+01	1.046E+04	7.031E-01
1992	1.210E+04	6.612E+06	4.442E+02	3.763E+01	1.050E+04	7.055E-01
1993	1.214E+04	6.631E+06	4.455E+02	3.774E+01	1.053E+04	7.075E-01
1994	1.214E+04	6.633E+06	4.457E+02	3.775E+01	1.053E+04	7.077E-01
1995	1.221E+04	6.672E+06	4.483E+02	3.798E+01	1.059E+04	7.119E-01
1996	1.242E+04	6.784E+06	4.558E+02	3.861E+01	1.077E+04	7.238E-01
1997	1.257E+04	6.868E+06	4.615E+02	3.909E+01	1.091E+04	7.328E-01
1998	1.254E+04	6.853E+06	4.604E+02	3.901E+01	1.088E+04	7.312E-01
1999	1.288E+04	7.034E+06	4.726E+02	4.004E+01	1.117E+04	7.505E-01
2000	1.342E+04	7.333E+06	4.927E+02	4.174E+01	1.165E+04	7.825E-01
2001	1.391E+04	7.599E+06	5.106E+02	4.326E+01	1.207E+04	8.108E-01
2002	1.435E+04	7.837E+06	5.266E+02	4.461E+01	1.245E+04	8.362E-01
2003	1.463E+04	7.991E+06	5.369E+02	4.548E+01	1.269E+04	8.526E-01
2004	1.492E+04	8.153E+06	5.478E+02	4.641E+01	1.295E+04	8.700E-01
2005	1.526E+04	8.336E+06	5.601E+02	4.745E+01	1.324E+04	8.894E-01
2006	1.608E+04	8.782E+06	5.901E+02	4.999E+01	1.395E+04	9.370E-01
2007	1.635E+04	8.930E+06	6.000E+02	5.083E+01	1.418E+04	9.528E-01
2008	1.716E+04	9.373E+06	6.298E+02	5.335E+01	1.488E+04	1.000E+00
2009	1.648E+04	9.005E+06	6.051E+02	5.126E+01	1.430E+04	9.609E-01
2010	1.584E+04	8.652E+06	5.813E+02	4.925E+01	1.374E+04	9.232E-01
2011	1.522E+04	8.313E+06	5.585E+02	4.732E+01	1.320E+04	8.870E-01
2012	1.462E+04	7.987E+06	5.366E+02	4.546E+01	1.268E+04	8.522E-01
2013	1.405E+04	7.674E+06	5.156E+02	4.368E+01	1.219E+04	8.188E-01
2014	1.350E+04	7.373E+06	4.954E+02	4.197E+01	1.171E+04	7.867E-01
2015	1.297E+04	7.084E+06	4.760E+02	4.032E+01	1.125E+04	7.558E-01
2016	1.246E+04	6.806E+06	4.573E+02	3.874E+01	1.081E+04	7.262E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2017	1.197E+04	6.539E+06	4.394E+02	3.722E+01	1.038E+04	6.977E-01
2018	1.150E+04	6.283E+06	4.221E+02	3.576E+01	9.977E+03	6.704E-01
2019	1.105E+04	6.036E+06	4.056E+02	3.436E+01	9.586E+03	6.441E-01
2020	1.062E+04	5.800E+06	3.897E+02	3.301E+01	9.210E+03	6.188E-01
2021	1.020E+04	5.572E+06	3.744E+02	3.172E+01	8.849E+03	5.946E-01
2022	9.800E+03	5.354E+06	3.597E+02	3.047E+01	8.502E+03	5.712E-01
2023	9.416E+03	5.144E+06	3.456E+02	2.928E+01	8.169E+03	5.488E-01
2024	9.047E+03	4.942E+06	3.321E+02	2.813E+01	7.848E+03	5.273E-01
2025	8.692E+03	4.748E+06	3.190E+02	2.703E+01	7.541E+03	5.066E-01
2026	8.351E+03	4.562E+06	3.065E+02	2.597E+01	7.245E+03	4.868E-01
2027	8.024E+03	4.383E+06	2.945E+02	2.495E+01	6.961E+03	4.677E-01
2028	7.709E+03	4.212E+06	2.830E+02	2.397E+01	6.688E+03	4.494E-01
2029	7.407E+03	4.046E+06	2.719E+02	2.303E+01	6.426E+03	4.317E-01
2030	7.116E+03	3.888E+06	2.612E+02	2.213E+01	6.174E+03	4.148E-01
2031	6.837E+03	3.735E+06	2.510E+02	2.126E+01	5.932E+03	3.985E-01
2032	6.569E+03	3.589E+06	2.411E+02	2.043E+01	5.699E+03	3.829E-01
2033	6.312E+03	3.448E+06	2.317E+02	1.963E+01	5.476E+03	3.679E-01
2034	6.064E+03	3.313E+06	2.226E+02	1.886E+01	5.261E+03	3.535E-01
2035	5.826E+03	3.183E+06	2.139E+02	1.812E+01	5.055E+03	3.396E-01
2036	5.598E+03	3.058E+06	2.055E+02	1.741E+01	4.856E+03	3.263E-01
2037	5.378E+03	2.938E+06	1.974E+02	1.673E+01	4.666E+03	3.135E-01
2038	5.168E+03	2.823E+06	1.897E+02	1.607E+01	4.483E+03	3.012E-01
2039	4.965E+03	2.712E+06	1.822E+02	1.544E+01	4.307E+03	2.894E-01
2040	4.770E+03	2.606E+06	1.751E+02	1.483E+01	4.138E+03	2.781E-01
2041	4.583E+03	2.504E+06	1.682E+02	1.425E+01	3.976E+03	2.672E-01
2042	4.404E+03	2.406E+06	1.616E+02	1.369E+01	3.820E+03	2.567E-01
2043	4.231E+03	2.311E+06	1.553E+02	1.316E+01	3.670E+03	2.466E-01
2044	4.065E+03	2.221E+06	1.492E+02	1.264E+01	3.526E+03	2.369E-01
2045	3.906E+03	2.134E+06	1.434E+02	1.214E+01	3.388E+03	2.277E-01
2046	3.752E+03	2.050E+06	1.377E+02	1.167E+01	3.255E+03	2.187E-01
2047	3.605E+03	1.970E+06	1.323E+02	1.121E+01	3.128E+03	2.101E-01
2048	3.464E+03	1.892E+06	1.271E+02	1.077E+01	3.005E+03	2.019E-01
2049	3.328E+03	1.818E+06	1.222E+02	1.035E+01	2.887E+03	1.940E-01
2050	3.198E+03	1.747E+06	1.174E+02	9.943E+00	2.774E+03	1.864E-01
2051	3.072E+03	1.678E+06	1.128E+02	9.553E+00	2.665E+03	1.791E-01
2052	2.952E+03	1.613E+06	1.083E+02	9.179E+00	2.561E+03	1.721E-01
2053	2.836E+03	1.549E+06	1.041E+02	8.819E+00	2.460E+03	1.653E-01
2054	2.725E+03	1.489E+06	1.000E+02	8.473E+00	2.364E+03	1.588E-01
2055	2.618E+03	1.430E+06	9.610E+01	8.141E+00	2.271E+03	1.526E-01
2056	2.515E+03	1.374E+06	9.233E+01	7.822E+00	2.182E+03	1.466E-01
2057	2.417E+03	1.320E+06	8.871E+01	7.515E+00	2.097E+03	1.409E-01
2058	2.322E+03	1.268E+06	8.523E+01	7.220E+00	2.014E+03	1.353E-01
2059	2.231E+03	1.219E+06	8.189E+01	6.937E+00	1.935E+03	1.300E-01
2060	2.143E+03	1.171E+06	7.868E+01	6.665E+00	1.859E+03	1.249E-01
2061	2.059E+03	1.125E+06	7.559E+01	6.404E+00	1.787E+03	1.200E-01
2062	1.979E+03	1.081E+06	7.263E+01	6.153E+00	1.717E+03	1.153E-01
2063	1.901E+03	1.039E+06	6.978E+01	5.912E+00	1.649E+03	1.108E-01
2064	1.827E+03	9.978E+05	6.704E+01	5.680E+00	1.585E+03	1.065E-01
2065	1.755E+03	9.587E+05	6.441E+01	5.457E+00	1.522E+03	1.023E-01
2066	1.686E+03	9.211E+05	6.189E+01	5.243E+00	1.463E+03	9.828E-02
2067	1.620E+03	8.850E+05	5.946E+01	5.037E+00	1.405E+03	9.443E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2068	1.556E+03	8.503E+05	5.713E+01	4.840E+00	1.350E+03	9.072E-02
2069	1.495E+03	8.169E+05	5.489E+01	4.650E+00	1.297E+03	8.717E-02
2070	1.437E+03	7.849E+05	5.274E+01	4.468E+00	1.246E+03	8.375E-02
2071	1.380E+03	7.541E+05	5.067E+01	4.293E+00	1.198E+03	8.046E-02
2072	1.326E+03	7.246E+05	4.868E+01	4.124E+00	1.151E+03	7.731E-02
2073	1.274E+03	6.962E+05	4.677E+01	3.963E+00	1.105E+03	7.428E-02
2074	1.224E+03	6.689E+05	4.494E+01	3.807E+00	1.062E+03	7.137E-02
2075	1.176E+03	6.426E+05	4.318E+01	3.658E+00	1.021E+03	6.857E-02
2076	1.130E+03	6.174E+05	4.149E+01	3.515E+00	9.805E+02	6.588E-02
2077	1.086E+03	5.932E+05	3.986E+01	3.377E+00	9.420E+02	6.330E-02
2078	1.043E+03	5.700E+05	3.830E+01	3.244E+00	9.051E+02	6.081E-02
2079	1.002E+03	5.476E+05	3.679E+01	3.117E+00	8.696E+02	5.843E-02
2080	9.631E+02	5.261E+05	3.535E+01	2.995E+00	8.355E+02	5.614E-02
2081	9.253E+02	5.055E+05	3.397E+01	2.877E+00	8.028E+02	5.394E-02
2082	8.891E+02	4.857E+05	3.263E+01	2.765E+00	7.713E+02	5.182E-02
2083	8.542E+02	4.666E+05	3.135E+01	2.656E+00	7.410E+02	4.979E-02
2084	8.207E+02	4.484E+05	3.012E+01	2.552E+00	7.120E+02	4.784E-02
2085	7.885E+02	4.308E+05	2.894E+01	2.452E+00	6.841E+02	4.596E-02
2086	7.576E+02	4.139E+05	2.781E+01	2.356E+00	6.572E+02	4.416E-02
2087	7.279E+02	3.977E+05	2.672E+01	2.263E+00	6.315E+02	4.243E-02
2088	6.994E+02	3.821E+05	2.567E+01	2.175E+00	6.067E+02	4.076E-02
2089	6.719E+02	3.671E+05	2.466E+01	2.089E+00	5.829E+02	3.917E-02
2090	6.456E+02	3.527E+05	2.370E+01	2.008E+00	5.601E+02	3.763E-02
2091	6.203E+02	3.389E+05	2.277E+01	1.929E+00	5.381E+02	3.616E-02
2092	5.960E+02	3.256E+05	2.187E+01	1.853E+00	5.170E+02	3.474E-02
2093	5.726E+02	3.128E+05	2.102E+01	1.781E+00	4.967E+02	3.338E-02
2094	5.501E+02	3.005E+05	2.019E+01	1.711E+00	4.773E+02	3.207E-02
2095	5.286E+02	2.888E+05	1.940E+01	1.644E+00	4.585E+02	3.081E-02
2096	5.078E+02	2.774E+05	1.864E+01	1.579E+00	4.406E+02	2.960E-02
2097	4.879E+02	2.666E+05	1.791E+01	1.517E+00	4.233E+02	2.844E-02
2098	4.688E+02	2.561E+05	1.721E+01	1.458E+00	4.067E+02	2.733E-02
2099	4.504E+02	2.461E+05	1.653E+01	1.401E+00	3.907E+02	2.625E-02
2100	4.328E+02	2.364E+05	1.588E+01	1.346E+00	3.754E+02	2.522E-02
2101	4.158E+02	2.271E+05	1.526E+01	1.293E+00	3.607E+02	2.424E-02
2102	3.995E+02	2.182E+05	1.466E+01	1.242E+00	3.466E+02	2.329E-02
2103	3.838E+02	2.097E+05	1.409E+01	1.194E+00	3.330E+02	2.237E-02
2104	3.688E+02	2.015E+05	1.354E+01	1.147E+00	3.199E+02	2.149E-02
2105	3.543E+02	1.936E+05	1.301E+01	1.102E+00	3.074E+02	2.065E-02
2106	3.404E+02	1.860E+05	1.250E+01	1.059E+00	2.953E+02	1.984E-02
2107	3.271E+02	1.787E+05	1.201E+01	1.017E+00	2.837E+02	1.906E-02

**Pheasant Point RDF
HAPs Concentrations Calculations**

CAS number	COMPOUND	Concentration ppmv	MOLECULAR WEIGHT	GRAVIMETRIC CONCENTRATION (mg/m³)
71556	1,1,1-Trichloroethane (methyl chloroform)	0.48	133.42	2.62
79345	1,1,2,2-Tetrachloroethane	1.11	167.86	7.62
75343	1,1-Dichloroethane (ethylidene dichloride)	2.35	98.96	9.51
75354	1,1-Dichloroethene (vinylidene chloride)	0.20	96.95	0.79
107062	1,2-Dichloroethane (ethylene dichloride)	0.41	98.96	1.66
78875	1,2-Dichloropropane (propylene dichloride)	0.18	112.99	0.83
107131	Acrylonitrile	6.33	53.06	13.74
75150	Carbon disulfide	0.58	76.14	1.81
56235	Carbon tetrachloride	0.00	153.84	0.00
463581	Carbonyl sulfide	0.49	60.07	1.20
108907	Chlorobenzene	0.25	112.56	1.15
75003	Chloroethane (ethyl chloride)	1.25	64.52	3.30
67663	Chloroform	0.03	119.39	0.15
75092	Dichloromethane (methylene chloride)	14.30	84.94	49.68
100414	Ethylbenzene	4.61	106.16	20.02
110543	Hexane	6.57	86.17	23.15
78933	Methyl ethyl ketone	7.09	72.10	20.91
108101	Methyl isobutyl ketone	1.87	100.07	7.65
127184	Perchloroethylene (tetrachloroethene)	3.73	165.85	25.30
79016	Trichloroethylene	2.82	131.39	15.15
75014	Vinyl chloride	7.34	62.50	18.76
71432	Benzene	1.91	78.11	6.10
74873	Methyl chloride(Chloromethane)	1.21	50.49	2.50
108883	Toluene	39.30	92.13	148.09
1330207	Xylene (isomers and mixtures)	12.10	106.16	52.54
	Mercury Compounds *	0.00	200.61	0.00
Total HAPs Gravimetric Concentration (mg/m3):				434.23

Smiths Creek Landfill Fugitive HAPs Emissions ROP Renewal Application

Fugitive Gas Production Rate (Year 2063) = 1,566,000 ft³/day = 16,187,766 m³/year
 (assumes 75% collection efficiency)

UNCONTROLLED LANDFILL GAS CONCENTRATIONS (a) - ISCC 50200602)

CAS number	COMPOUND	Concentration ppmv*	MOLECULAR WEIGHT	GRAVIMETRIC CONCENTRATION (mg/M ³)	POTENTIAL TO EMIT		
					HAPS (Mg/yr)	HAPS (lbs/hr)	HAPS (tons/yr)
71556	1,1,1-Trichloroethane (methyl chloroform)	0.48	133.42	2.62	0.0424	0.0107	0.0468
79345	1,1,2,2-Tetrachloroethane	1.11	167.86	7.62	0.1234	0.0311	0.1361
75343	1,1-Dichloroethane (ethylidene dichloride)	2.35	98.96	9.51	0.1540	0.0388	0.1699
75354	1,1-Dichloroethene (vinylidene chloride)	0.20	96.95	0.79	0.0128	0.0032	0.0142
107062	1,2-Dichloroethane (ethylene dichloride)	0.41	98.96	1.66	0.0269	0.0068	0.0296
78875	1,2-Dichloropropane (propylene dichloride)	0.18	112.99	0.83	0.0135	0.0034	0.0149
107131	Acrylonitrile	6.33	53.06	13.74	0.2224	0.0560	0.2453
75150	Carbon disulfide	0.58	76.14	1.81	0.0292	0.0074	0.0323
56235	Carbon tetrachloride	0.00	153.84	0.00	0.0000	0.0000	0.0000
463581	Carbonyl sulfide	0.49	60.07	1.20	0.0195	0.0049	0.0215
108907	Chlorobenzene	0.25	112.56	1.15	0.0186	0.0047	0.0206
75003	Chloroethane (ethyl chloride)	1.25	64.52	3.30	0.0534	0.0135	0.0589
67663	Chloroform	0.03	119.39	0.15	0.0024	0.0006	0.0026
75092	Dichloromethane (methylene chloride)	14.30	84.94	49.68	0.8042	0.2026	0.8873
100414	Ethylbenzene	4.61	106.16	20.02	0.3240	0.0816	0.3575
110543	Hexane	6.57	86.17	23.15	0.3748	0.0944	0.4135
108101	Methyl isobutyl ketone	1.87	100.07	7.65	0.1239	0.0312	0.1367
127184	Perchloroethylene (tetrachloroethene)	3.73	165.85	25.30	0.4096	0.1032	0.4519
79016	Trichloroethylene	2.82	131.39	15.15	0.2453	0.0618	0.2707
75014	Vinyl chloride	7.34	62.50	18.76	0.3037	0.0765	0.3351
71432	Benzene	1.91	78.11	6.10	0.0988	0.0249	0.1090
74873	Methyl chloride(Chloromethane)	1.21	50.49	2.50	0.0404	0.0102	0.0446
108883	Toluene	39.30	92.13	148.09	2.3972	0.6038	2.6448
1330207	Xylene (isomers and mixtures)	12.10	106.16	52.54	0.8505	0.2142	0.9383
	Mercury Compounds *	0.00	200.61	0.00	0.0000	0.0000	0.0000
Total HAPs: Greatest Single HAP: Total of all other HAPs:							7.38 2.64 4.74

*based on 11/98 AP-42 Factors for Landfill Gas

Smiths Creek Landfill
Air Emissions Estimate - Leachate Storage Tank

Compound	HAP	VOM	Maximum Loading* (mg/L)	Leachate Storage Tank	
				Air Emissions (g/s)**	(ton/yr)
1,1-Dichloroethane	X	X	0.0025	4.95E-09	1.72E-07
1,1-Dichloroethene	X	X	0.0025	4.97E-09	1.73E-07
1,1,1-Trichloroethane		X	0.0025	4.62E-09	1.60E-07
1,1,2-Trichloroethane	X	X	0.0025	4.40E-09	1.53E-07
1,1,1,2-Tetrachloroethane		X	0.0025	4.33E-09	1.50E-07
1,1,2,2-Tetrachloroethane	X	X	0.0025	3.90E-09	1.35E-07
1,2-Dichlorobenzene		X	0.0025	4.24E-09	1.47E-07
1,2-Dichloroethane		X	0.0025	4.70E-09	1.63E-07
1,2-Dichloropropane	X	X	0.0025	4.55E-09	1.58E-07
1,4-Dichlorobenzene	X	X	0.0025	4.34E-09	1.51E-07
1,2,3- Trichloropropane		X	0.0025	4.04E-09	1.40E-07
Benzene	X	X	0.0069	1.35E-08	4.69E-07
Bromodichloromethane		X	0.0025	3.99E-09	1.39E-07
Bromoform	X	X	0.0025	3.81E-09	1.32E-07
Bromomethane (Methyl Bromide)	X	X	0.0125	2.64E-08	9.17E-07
Carbon Tetrachloride	X	X	0.0025	4.63E-09	1.61E-07
Chlorobenzene	X	X	0.0025	4.54E-09	1.58E-07
Chlorodibromomethane		X	0.0025	3.70E-09	1.29E-07
Chloroethane	X	X	0.0125	2.59E-08	9.00E-07
Chloroform	X	X	0.0025	4.85E-09	1.68E-07
Chloromethane (Methyl Chloride)	X	X	0.0125	2.04E-08	7.09E-07
Dibromomethane		X	0.0025	3.43E-09	1.19E-07
cis-1,3-Dichloropropene	X	X	0.0025	4.78E-09	1.66E-07
Ethylbenzene	X	X	0.0205	3.59E-08	1.25E-06
Iodomethane		X	0.0025	4.66E-09	1.62E-07
Methylene Chloride (Dichloromethane)	X	X	0.0125	2.58E-08	8.96E-07
Styrene	X	X	0.0025	4.35E-09	1.51E-07
Tetrachloroethene	X	X	0.0025	4.48E-09	1.56E-07
Toluene	X	X	0.0182	3.32E-08	1.15E-06
cis-1,2-Dichloroethene		X	0.0025	4.18E-09	1.45E-07
trans-1,2-Dichloroethene		X	0.0025	5.24E-09	1.82E-07
trans-1,3-Dichloropropene	X	X	0.0025	4.74E-09	1.65E-07
Trichloroethene	X	X	0.0025	4.68E-09	1.63E-07
Trichlorofluoromethane		X	0.0025	4.83E-09	1.68E-07
Vinyl Chloride	X	X	0.0025	5.34E-09	1.85E-07
Xylenes, Total	X	X	0.056	1.06E-07	3.68E-06
Total VOM			2.22E-01	4.12E-07	1.43E-05
Total HAPs			1.92E-01	3.60E-07	1.25E-05

*Based on 2/8/2022 leachate analytical results. Maximum Loading value represents 50% of the detection limit for all compounds except Benzene, Ethylbenzene, Toluene, and Xylene.

**from Water9 Modeling Results

Smiths Creek Leachate Storage Tank NSPS Subpart Kb Applicability

Leachate VOC Partial Pressure Calculation

Compound	Maximum Concentration (ppmw)	Antoine Coefficients			Pure Vapor Pressure (mm Hg)	VOC Partial Pressures	
		A	B	C		(mm Hg)	(kPa)
1,1-Dichloroethane	0.0025	6.99276	1176.864	228.8380	143.358	3.58E-07	4.78E-08
1,1-Dichloroethene	0.0025	6.97220	1099.400	237.2000	402.070	1.01E-06	1.34E-07
1,1,1-Trichloroethane	0.0025	6.82740	1147.140	218.5387	80.329	2.01E-07	2.68E-08
1,1,2-Trichloroethane	0.0025	7.19210	1480.319	229.0943	13.035	3.26E-08	4.34E-09
1,1,1,2-Tetrachloroethane	0.0025	6.89800	1365.880	209.7400	6.410	1.60E-08	2.14E-09
1,1,2,2-Tetrachloroethane	0.0025	6.89379	1354.506	192.4300	2.229	5.57E-09	7.43E-10
1,2-Dichlorobenzene	0.0025	6.88255	1537.672	205.2496	0.768	1.92E-09	2.56E-10
1,2-Dichloroethane	0.0025	7.06839	1292.540	225.0000	46.942	1.17E-07	1.56E-08
1,2-Dichloropropane	0.0025	6.98000	1380.100	222.8000	14.593	3.65E-08	4.86E-09
1,4-Dichlorobenzene	0.0025	7.19900	1690.291	218.0900	0.855	2.14E-09	2.85E-10
1,2,3-Trichloropropane	0.0025	6.90300	788.200	243.2300	6994.566	1.75E-05	2.33E-06
Benzene	0.0069	6.90500	1211.033	220.7900	57.282	3.95E-07	5.27E-08
Bromodichloromethane	0.0025	7.96550	1846.561	273.1600	35.176	8.79E-08	1.17E-08
Bromoform	0.0025	7.98810	2158.654	273.1600	3.047	7.62E-09	1.02E-09
Bromomethane (Methyl Bromide)	0.0125	7.56631	1301.449	273.1600	1101.670	1.38E-05	1.84E-06
Carbon Tetrachloride	0.0025	6.93390	1242.430	230.0000	71.185	1.78E-07	2.37E-08
Chlorobenzene	0.0025	6.97800	1431.050	217.5500	6.472	1.62E-08	2.16E-09
Chlorodibromomethane	0.0025	7.28880	1733.834	273.1600	18.257	4.56E-08	6.09E-09
Chloroethane	0.0125	6.98600	1030.010	238.6100	825.246	1.03E-05	1.38E-06
Chloroform	0.0025	6.49300	929.440	196.0300	119.739	2.99E-07	3.99E-08
Chloromethane (Methyl Chloride)	0.0125	7.09300	948.580	249.3400	3145.683	3.93E-05	5.24E-06
Dibromomethane	0.0025	1.68123	0.000	0.0000	47.999	1.20E-07	1.60E-08
cis-1,3-Dichloropropene	0.0025	6.80731	1327.640	230.1337	24.003	6.00E-08	8.00E-09
Ethylbenzene	0.0205	6.97500	1424.255	213.2100	5.252	1.08E-07	1.44E-08
Iodomethane	0.0025	7.65738	1507.300	273.1600	261.527	6.54E-07	8.72E-08
Methylene Chloride (Dichloromethane)	0.0125	6.96841	1074.291	222.9950	278.603	3.48E-06	4.64E-07
Styrene	0.0025	6.94536	1437.432	208.3800	3.133	7.83E-09	1.04E-09
Tetrachloroethene	0.0025	6.97600	1386.920	217.5300	9.969	2.49E-08	3.32E-09
Toluene	0.0182	6.95400	1344.800	219.4800	16.088	2.93E-07	3.90E-08
cis-1,2-Dichloroethene	0.0025	7.02230	1205.400	230.6000	127.147	3.18E-07	4.24E-08
trans-1,2-Dichloroethene	0.0025	6.96510	1141.900	231.9000	214.173	5.35E-07	7.14E-08
trans-1,3-Dichloropropene	0.0025	6.80731	1327.640	230.1337	24.003	6.00E-08	8.00E-09
Trichloroethene	0.0025	6.51800	1018.600	192.7000	39.992	1.00E-07	1.33E-08
Trichlorofluoromethane	0.0025	6.88400	1043.004	236.8800	543.109	1.36E-06	1.81E-07
Vinyl Chloride	0.0025	6.99070	969.052	250.5856	2163.125	5.41E-06	7.21E-07
Xylenes, Total	0.056	7.94014	2090.317	273.1600	4.715	2.64E-07	3.52E-08
Total						9.65E-05	1.29E-05
Kb Limit							3.5

Notes:

Antoine coefficients obtained from 1) WATER9 property database 2) EPA Air Emissions Models for Waste and Wastewater (EPA-453/R-94-080A-1994)

High monthly average temperature for Detroit, MI is 58.1 °F or 14.5 °C, obtained from Tanks 4.0.9d weather database.

Sample Calculation:

TOLUENE vapor pressure (mm Hg) = $10^{(A - (B/(T+C)))}$ = $10^{(6.954 - (1344.8/(219.48+14.5)))}$ = 16.088 mm Hg

Conversion factor = 0.13332 kPa/mm Hg

**Smiths Creek Landfill
2021 Vehicle Information**

Paved Road Travel				
Vehicle Type¹	Total Number of Vehicles	Average Vehicle Weight Loaded (lbs)	Average Vehicle Weight (lbs)	Average Weight (lbs)
Leachate Sludge Trucks	100	64,329	49,369	56,849
Car/Pickup/Van	7,200	4,921	4,641	4,781
Dump Truck	500	9,912	7,284	8,598
Front-End Loader	6,300	59,238	42,455	50,846
Rear-End Loader	8,500	53,715	36,920	58,916
Recycle	100	51,665	45,330	48,498
Recycling Customers	10500	3,987	3,977	3,982
Roll-Off	7,300	48,844	38,025	43,435
Roll-Off (Deliveries)	900	96,874	36,456	66,665
Self Contained Packer	1,400	52,161	42,300	47,230
Semi with pup	500	145,245	52,085	98,665
Stake Truck/Service Truck	400	2,743	2,384	2,563
Septage Truck	900	42,906	24,140	42,906
Transfer Trailer	5,000	114,968	56,891	85,929
Van, Truck with Trailer	11,700	5,577	4,183	4,880
Gravel Train-Construction/Deliveries	477	153,227	50,152	101,690
Vac Truck	80	54712.41	46270.89	50491.65
TOTALS:				
Total number of vehicles:	61,857 vehicles			
Average number of vehicles per day:	198 vehicles			
Average weight of vehicles traveling paved roads:	16.01 tons			

Unpaved Road Travel				
Vehicle Type	Total Number of Vehicles	Average Vehicle Weight Loaded (lbs)	Average Vehicle Weight (lbs)	Average Weight (lbs)
Leachate Sludge Trucks	100	64,329	49,369	
Dump Truck	500	9,912	7,284	8,598
Front-End Loader	6,300	59,238	42,455	50,846
Rear-End Loader	8,500	53,715	36,920	45,317
Roll-Off	7,300	48,844	38,025	43,435
Roll-Off (Deliveries)	900	96,874	36,456	66,665
Self Contained Packer	1,400	52,161	42,300	47,230
Semi with pup	500	145,245	52,085	98,665
Stake Truck/Service Truck	400	2,743	2,384	2,563
Transfer Trailer	5,000	114,968	56,891	85,929
Van, Truck with Trailer	11,115	5,577	4,183	4,880
Gravel Train	477	153,227	50,152	101,690
Vac Truck	80	54712.41	46270.89	50491.65
TOTALS:				
Total number of vehicles:	42,472 vehicles			
Average number of vehicles per day:	136 vehicles			
Average weight of vehicles traveling unpaved roads:	20.47 tons			

¹Average Vehicle Weight Loaded and Average Vehicle Weight per Barbara Barnes SCL Coordinator 2/2/2022

**Smiths Creek Landfill
2021 Vehicle Information**

**FUGITIVE DUST EMISSIONS FROM PAVED ROADS
SMITHS CREEK LANDFILL SRN N6207
Smiths Creek, Michigan**

Reporting Year: **ROP RENEWAL APPLICATION**

Landfill Operation

312 days

Vehicle quantity

61,857 vehicles/yr = 138 vehicles/day

Average vehicle weight (tons)

16.01

Length of paved road (miles)

1.47

Fugitive Dust Emissions Equation

$$E_{ext} = [k(sL)^{0.91} * (W)^{1.02}] * (1 - (P/4N))$$

where:

E_{ext} = annual or other long-term average emission factor in the same units as k

P = number of "wet" days with at least 0.01 in of precipitation during the averaging period: 140 days^(a)

N = number of days in the averaging period: 365 days for annual

k = particle size multiplier for particle size range and units of interest: : PM10 = 0.0022 lb/VMT^(b)

sL = road surface silt loading (grams per square meter) (g/m²): 7.4^(c)

W = average weight (tons) of the vehicles traveling the road

PM 10 Uncontrolled Emissions

E_{ext}	PM 10 Emissions (lbs)	PM 10 Emissions (tons)
0.21	18,916	9.5

PM 10 Controlled Emissions

Control Device = watering of paved and unpaved roads

Tons per year * .80 control = controlled emissions

PM10 Uncontrolled emissions - controlled emissions = fugitive emissions

7.6 tpy

1.9 tpy

Notes:

(a) Source: AP-42 Figure 13.2.1-2

(b) Source: AP-42 Table 13.2-1.1

(c) Source: AP-42, Table13.2.1-4

**2021 MAERS
FUGITIVE DUST EMISSIONS FROM UNPAVED ROADS
SMITHS CREEK LANDFILL SRN N6207
Smiths Creek, Michigan**

Reporting Year: **ROP RENEWAL APPLICATION**

Landfill Operation

312 days

Vehicle quantity

42,472 vehicles/yr = 109 vehicles/day

Average vehicle weight (tons)

20.5

Length of unpaved road (miles)

0.29

Uncontrolled Fugitive Dust Emissions Equation

$$E = k (s/12)^a (W/3)^b$$

where:

E = size-specific emission factor (lb/VMT)

s = surface material silt content (%): 6.4^(c)

k = empirical constant : PM10 = 1.5 lb/VMT ^(b)

a = empirical constant: PM10 = .9^(b)

b = empirical constant: PM10 = .45^(b)

W= average weight of vehicle fleet = 22.9 tons

$$E = 2.02$$

Uncontrolled Conditions with Natural Mitigation due to Precipitation

$$E_{ext} = E [(365-P)/365]$$

where:

E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT

E = size-specific emission factor (lb/VMT)

P = number of "wet" days with at least 0.01 in of precipitation during the averaging period: **140 days** ^(a)

$$E_{ext} = 1.25$$

PM 10 Uncontrolled Emissions

E _{ext}	PM 10 Emissions (lbs)	PM 10 Emissions (tons)
1.25	15,349	7.7

PM 10 Controlled Emissions

Control Device = watering of paved and unpaved roads

Tons per year * .8 control = controlled emissions

PM10 Uncontrolled emissions - controlled emissions = fugitive emissions **1.5 tpy**

Notes:

(a) Source: AP-42 Figure 13.2.1-2

(b) Source: AP-42 Table 13.2.2-2

(c) Source: AP-42, Table 13.2.2-1

**2021 MAERS
Material Throughput**

Material Throughput = (# of vehicles x length of paved road) + (# of vehicles x length of unpaved road)

ROP RENI Calculations

<u>Vehicle quantity for paved roads</u>		<u>Length of paved road (miles)</u>
Total	61,857	1.47

<u>Vehicle quantity for unpaved roads</u>		<u>Length of unpaved road (miles)</u>
Total	42,472	0.29

Material Throughput: 103,247 miles

Total PM 10 Emissions = PM10 Emissions from (Paved Roads + Unpaved Roads)

= 6853.0 lbs

From: [Maureen Bennett](#)
To: [EGLE-ROP](#)
Cc: [Nick Diedrich](#)
Subject: N6207 (Section 2) - ROP Renewal Application
Date: Wednesday, November 23, 2022 9:37:01 AM
Attachments: [Cover Letter.pdf](#)
[EQP6000-ROP-Renewal-Application-Form-PDF signed.pdf](#)
[N6207 Final 06-07-18 Markup.docx](#)
[EU-TREATMENTSYS NEW AAAA.docx](#)
[EU-TREATMENTSYS NEW OOO.docx](#)
[FG-ICENGINES NEW.docx](#)
[Blue Water Treatment Monitoring Plan Rev2 07292021.pdf](#)
[BWR PMP Rev 03.pdf](#)
[BWR SSM Rev 01.pdf](#)

CAUTION: This is an External email. Please send suspicious emails to abuse@michigan.gov

Hello, please see attached.

Thank you!

Maureen Bennett

DTE Vantage | Environmental Engineer

One Energy Plaza, 400 WCB Detroit, MI 48226

o 313.548.8754 | m 734.834.0005

dtevantage.com





November 23, 2022

Ms. Joyce Zhu
District Supervisor – Air Quality
Michigan Department of Environment, Great Lakes and Energy
27700 Donald Court
Warren, MI 48092

**Re: ROP Renewal Application
MI-ROP-N6207-2018
Blue Water Renewables (SRN: N6207)**

Dear Ms. Zhu:

This package is being submitted on behalf of Blue Water Renewables, LLC as a Renewable Operating Permit (ROP) renewal application. Applicable forms and attachments are enclosed along with certification of this application by the responsible official.

If you have any questions concerning this application, please contact me at either maureen.bennett@dteenergy.com or 313-548-8754.

Sincerely,
DTE BIOMASS ENERGY

11/23/2022

X 

Maureen Bennett
Environmental Engineer
Signed by: u31146

enc. Renewable Operating Permit Application Forms



RENEWABLE OPERATING PERMIT RENEWAL APPLICATION FORM

This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Refer to instructions for additional information to complete the Renewable Operating Permit Renewal Application Form.

GENERAL INSTRUCTIONS

This application form should be submitted as part of an administratively complete application package for renewal of a Renewable Operating Permit (ROP). This application form consists of nine parts. Parts A – H must be completed for all applications and must also be completed for each section of a sectioned ROP. Answer all questions in all parts of the form unless directed otherwise. Detailed instructions for this application form can be found at <http://michigan.gov/air> (select the Permits Tab, “Renewable Operating Permits (ROP)/Title V”, then “ROP Forms & Templates”).

PART A: GENERAL INFORMATION

Enter information about the source, owner, contact person and the responsible official.

SOURCE INFORMATION

SRN N6207	SIC Code 4911	NAICS Code 221119	Existing ROP Number MI-ROP-N6207-2018	Section Number (if applicable) 2
Source Name Blue Water Renewables, LLC				
Street Address 6797 Smiths Creek Road				
City Smiths Creek	State MI	ZIP Code 48074	County St. Clair	
Section/Town/Range (if address not available)				
Source Description Blue Water Renewables, LLC has two reciprocating internal combustions engines (RICE) which combust landfill gas (LFG) from Smiths Creek Landfill to produce electricity. The RICE engines are permitted under Permit-To-Install Number 163-09a and ROP numbers MI-ROP-0262-2012a and MI-ROP-N6207-2018.				
<input type="checkbox"/> Check here if any of the above information is different than what appears in the existing ROP. Identify any changes on the marked-up copy of your existing ROP.				

OWNER INFORMATION

Owner Name DTE Biomass Energy	Section Number (if applicable) 2			
Mailing address (<input type="checkbox"/> check if same as source address) One Energy Plaza, 400 WCB				
City Detroit	State MI	ZIP Code 48226	County Wayne	Country USA

Check here if any information in this ROP renewal application is confidential. Confidential information should be identified on an Additional Information (AI-001) Form.

PART A: GENERAL INFORMATION (continued)

At least one contact and responsible official must be identified. Additional contacts and responsible officials may be included if necessary.

CONTACT INFORMATION

Contact 1 Name Maureen Bennett		Title Environmental Engineer		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address) One Energy Plaza, 400 WCB				
City Detroit	State MI	ZIP Code 48226	County Wayne	Country USA
Phone number 313-548-8754		E-mail address maureen.bennett@dteenergy.com		

Contact 2 Name (optional)		Title		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address)				
City	State	ZIP Code	County	Country
Phone number	E-mail address			

RESPONSIBLE OFFICIAL INFORMATION

Responsible Official 1 Name Kevin Dobson		Title Vice President - DTE Biomass Energy		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address) One Energy Plaza, 400 WCB				
City Detroit	State MI	ZIP Code 48226	County Wayne	Country USA
Phone number 313-548-8126		E-mail address kevin.dobson@dteenergy.com		

Responsible Official 2 Name (optional)		Title		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address)				
City	State	ZIP Code	County	Country
Phone number	E-mail address			

<input type="checkbox"/> Check here if an AI-001 Form is attached to provide more information for Part A. Enter AI-001 Form ID:

PART B: APPLICATION SUBMITTAL and CERTIFICATION by Responsible Official

Identify the items that are included as part of your administratively complete application in the checklist below. For your application to be complete, it must include information necessary to evaluate the source and to determine all applicable requirements. Answer the compliance statements as they pertain to all the applicable requirements to which the source is subject. The source's Responsible Official must sign and date this form.

Listing of ROP Application Contents. Check the box for the items included with your application.	
<input checked="" type="checkbox"/> Completed ROP Renewal Application Form (and any AI-001 Forms) (required)	<input type="checkbox"/> Compliance Plan/Schedule of Compliance
<input checked="" type="checkbox"/> Mark-up copy of existing ROP using official version from the AQD website (required)	<input type="checkbox"/> Stack information
<input type="checkbox"/> Copies of all Permit(s) to Install (PTIs) that have not been incorporated into existing ROP (required)	<input type="checkbox"/> Acid Rain Permit Initial/Renewal Application
<input type="checkbox"/> Criteria Pollutant/Hazardous Air Pollutant (HAP) Potential to Emit Calculations	<input type="checkbox"/> Cross-State Air Pollution Rule (CSAPR) Information
<input type="checkbox"/> MAERS Forms (to report emissions not previously submitted)	<input type="checkbox"/> Confidential Information
<input type="checkbox"/> Copies of all Consent Order/Consent Judgments that have not been incorporated into existing ROP	<input checked="" type="checkbox"/> Paper copy of all documentation provided (required)
<input type="checkbox"/> Compliance Assurance Monitoring (CAM) Plan	<input checked="" type="checkbox"/> Electronic documents provided (optional)
<input type="checkbox"/> Other Plans (e.g., Malfunction Abatement, Fugitive Dust, Operation and Maintenance, etc.)	<input type="checkbox"/> Other, explain:

Compliance Statement	
This source is in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
This source will continue to be in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
This source will meet in a timely manner applicable requirements that become effective during the permit term.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The method(s) used to determine compliance for each applicable requirement is/are the method(s) specified in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and all other applicable requirements not currently contained in the existing ROP.	
If any of the above are checked No, identify the emission unit(s) or flexible group(s) affected and the specific condition number(s) or applicable requirement for which the source is or will be out of compliance at the time of issuance of the ROP renewal on an AI-001 Form. Provide a compliance plan and schedule of compliance on an AI-001 Form.	

Name and Title of the Responsible Official (Print or Type)	
Kevin Dobson, Vice President - DTE Biomass Energy	
<i>As a Responsible Official, I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.</i>	
<u>Kevin Dobson</u> Signature of Responsible Official	<u>11.22.2022</u> Date

PART C: SOURCE REQUIREMENT INFORMATION

Answer the questions below for specific requirements or programs to which the source may be subject.

C1.	Actual emissions and associated data from all emission units with applicable requirements (including those identified in the existing ROP, Permits to Install and other equipment that have not yet been incorporated into the ROP) are required to be reported in MAERS. Are there any emissions and associated data that have not been reported in MAERS for the most recent emissions reporting year? If Yes , identify the emission unit(s) that was/were not reported in MAERS on an AI-001 Form. Applicable MAERS form(s) for unreported emission units must be included with this application.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C2.	Is this source subject to the federal regulations on ozone-depleting substances? (40 CFR Part 82)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C3.	Is this source subject to the federal Chemical Accident Prevention Provisions? (Section 112(r) of the Clean Air Act Amendments, 40 CFR Part 68) If Yes , a Risk Management Plan (RMP) and periodic updates must be submitted to the USEPA. Has an updated RMP been submitted to the USEPA?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
C4.	Has this stationary source added or modified equipment since the last ROP renewal that changes the potential to emit (PTE) for criteria pollutant (CO, NOx, PM10, PM2.5, SO2, VOC, lead) emissions? If Yes , include potential emission calculations (or the PTI and/or ROP revision application numbers, or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. If No , criteria pollutant potential emission calculations do not need to be included.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C5.	Has this stationary source added or modified equipment since the last ROP renewal that changes the PTE for hazardous air pollutants (HAPs) regulated by Section 112 of the federal Clean Air Act? If Yes , include potential emission calculations (or the PTI and/or ROP revision application numbers or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. Fugitive emissions must be included in HAP emission calculations. If No , HAP potential emission calculations do not need to be included.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C6.	Are any emission units subject to the Cross-State Air Pollution Rule (CSAPR)? If Yes , identify the specific emission unit(s) subject to CSAPR on an AI-001 Form.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C7.	Are any emission units subject to the federal Acid Rain Program? If Yes , identify the specific emission unit(s) subject to the federal Acid Rain Program on an AI-001 Form. Is an Acid Rain Permit Renewal Application included with this application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
C8.	Are any emission units identified in the existing ROP subject to compliance assurance monitoring (CAM)? If Yes , identify the specific emission unit(s) subject to CAM on an AI-001 Form. If a CAM plan has not been previously submitted to EGLE, one must be included with the ROP renewal application on an AI-001 Form. If the CAM Plan has been updated, include an updated copy. Is a CAM plan included with this application? If a CAM Plan is included, check the type of proposed monitoring included in the Plan: 1. Monitoring proposed by the source based on performance of the control device, or 2. Presumptively Acceptable Monitoring, if eligible	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/>
C9.	Does the source have any plans such as a malfunction abatement plan, fugitive dust plan, operation/maintenance plan, or any other monitoring plan that is referenced in an existing ROP, Permit to Install requirement, or any other applicable requirement? If Yes , then a copy must be submitted as part of the ROP renewal application.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C10.	Are there any specific requirements that the source proposes to be identified in the ROP as non-applicable? If Yes , then a description of the requirement and justification must be submitted as part of the ROP renewal application on an AI-001 Form.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/>	Check here if an AI-001 Form is attached to provide more information for Part C. Enter AI-001 Form ID: AI-	

PART E: EXISTING ROP INFORMATION

Review all emission units and applicable requirements (including any source wide requirements) in the existing ROP and answer the questions below as they pertain to all emission units and all applicable requirements in the existing ROP.

<p>E1. Does the source propose to make any additions, changes or deletions to terms, conditions and underlying applicable requirements as they appear in the existing ROP? If <u>Yes</u>, identify changes and additions on Part F, Part G and/or Part H.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>E2. For each emission unit(s) identified in the existing ROP, <u>all</u> stacks with applicable requirements are to be reported in MAERS. Are there any stacks with applicable requirements for emission unit(s) identified in the existing ROP that were <u>not</u> reported in the most recent MAERS reporting year? If <u>Yes</u>, identify the stack(s) that was/were not reported on applicable MAERS form(s).</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>E3. Have any emission units identified in the existing ROP been modified or reconstructed that required a PTI? If <u>Yes</u>, complete Part F with the appropriate information.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>E4. Have any emission units identified in the existing ROP been dismantled? If <u>Yes</u>, identify the emission unit(s) and the dismantle date in the comment area below or on an AI-001 Form.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>Comments:</p> <p>In response to E1 - EGLE provided revised AQD template tables for Municipal Solid Waste Landfills on the EGLE website.</p> <p>EU-TREATMENTSYS-BWR2 has been updated with two templates to be incorporated: NMOC-OOO and MACT AAAA.</p> <p>FG-ICENGINES-BWR2 has been updated with one template to be incorporated: Existing Landfill Gas Spark Ignition >500 bhp.</p>	
<p><input type="checkbox"/> Check here if an AI-001 Form is attached to provide more information for Part E. Enter AI-001 Form ID: AI-</p>	

PART F: PERMIT TO INSTALL (PTI) INFORMATION

Review all emission units and applicable requirements at the source and answer the following questions as they pertain to **all** emission units with PTIs. Any PTI(s) identified below must be attached to the application.

F1. Has the source obtained any PTIs where the applicable requirements from the PTI have not been incorporated into the existing ROP? If Yes, complete the following table. Yes No
 If No, go to Part G.

Permit to Install Number	Emission Units/Flexible Group ID(s)	Description (Include Process Equipment, Control Devices and Monitoring Devices)	Date Emission Unit was Installed/ Modified/ Reconstructed

F2. Do any of the PTIs listed above change, add, or delete terms/conditions to **established emission units** in the existing ROP? If Yes, identify the emission unit(s) or flexible group(s) affected in the comments area below or on an AI-001 Form and identify all changes, additions, and deletions in a mark-up of the existing ROP. Yes No

F3. Do any of the PTIs listed above identify **new emission units** that need to be incorporated into the ROP? If Yes, submit the PTIs as part of the ROP renewal application on an AI-001 Form, and include the new emission unit(s) or flexible group(s) in the mark-up of the existing ROP. Yes No

F4. Are there any stacks with applicable requirements for emission unit(s) identified in the PTIs listed above that were not reported in MAERS for the most recent emissions reporting year? If Yes, identify the stack(s) that were not reported on the applicable MAERS form(s). Yes No

F5. Are there any proposed administrative changes to any of the emission unit names, descriptions or control devices in the PTIs listed above for any emission units not already incorporated into the ROP? If Yes, describe the changes on an AI-001 Form. Yes No

Comments:

Check here if an AI-001 Form is attached to provide more information for Part F. Enter AI-001 Form ID: **AI-**

PART H: REQUIREMENTS FOR ADDITION OR CHANGE

Complete this part of the application form for all proposed additions, changes or deletions to the existing ROP. This includes state or federal regulations that the source is subject to and that must be incorporated into the ROP or other proposed changes to the existing ROP. **Do not include additions or changes that have already been identified in Parts F or G of this application form.** If additional space is needed copy and complete an additional Part H.

Complete a separate Part H for each emission unit with proposed additions and/or changes.

H1. Are there changes that need to be incorporated into the ROP that have not been identified in Parts F and G? If <u>Yes</u> , answer the questions below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H2. Are there any proposed administrative changes to any of the existing emission unit names, descriptions or control devices in the ROP? If <u>Yes</u> , describe the changes in questions H8 – H16 below and in the affected Emission Unit Table(s) in the mark-up of the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H3. Does the source propose to add a new emission unit or flexible group to the ROP not previously identified in Parts F or G? If <u>Yes</u> , identify and describe the emission unit name, process description, control device(s), monitoring device(s) and applicable requirements in questions H8 – H16 below and in a new Emission Unit Table in the mark-up of the ROP. See instructions on how to incorporate a new emission unit/flexible group into the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H4. Does the source propose to add new state or federal regulations to the existing ROP? If <u>Yes</u> , on an AI-001 Form, identify each emission unit/flexible group that the new regulation applies to and identify <u>each</u> state or federal regulation that should be added. Also, describe the new requirements in questions H8 – H16 below and add the specific requirements to existing emission units/flexible groups in the mark-up of the ROP, create a new Emission Unit/Flexible Group Table, or add an AQD template table for the specific state or federal requirement.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
H5. Has a Consent Order/Consent Judgment (CO/CJ) been issued where the requirements were not incorporated into the existing ROP? If <u>Yes</u> , list the CO/CJ number(s) below and add or change the conditions and underlying applicable requirements in the appropriate Emission Unit/Flexible Group Tables in the mark-up of the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H6. Does the source propose to add, change and/or delete source-wide requirements? If <u>Yes</u> , identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. The existing AQD template table for 40 CFR 60 Subpart WWW that is in the current ROP should be removed since the landfill is now subject to the provisions of the Federal Plan (40 CFR 62 Subpart OOO). Portions of the Federal Plan regulations (monitoring, operational standards and compliance provisions) transitioned to the Landfill NESHAP on September 27, 2021.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
H7. Are you proposing to streamline any requirements? If <u>Yes</u> , identify the streamlined and subsumed requirements and the EU ID, and provide a justification for streamlining the applicable requirement below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

<p>H8. Does the source propose to add, change and/or delete emission limit requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H9. Does the source propose to add, change and/or delete material limit requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H10. Does the source propose to add, change and/or delete process/operational restriction requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H11. Does the source propose to add, change and/or delete design/equipment parameter requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H12. Does the source propose to add, change and/or delete testing/sampling requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>H13. Does the source propose to add, change and/or delete monitoring/recordkeeping requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p> <p>Monitoring and some recordkeeping provisions will be conducted under the revised Landfill NESHAP and Federal Plan instead of under the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<p>H14. Does the source propose to add, change and/or delete reporting requirements? If <u>Yes</u>, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.</p> <p>Reporting provisions will be conducted under the revised Landfill NESHAP and Federal Plan instead of under the now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW).</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

H15. Does the source propose to add, change and/or delete **stack/vent restrictions**? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H16. Does the source propose to add, change and/or delete any **other** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H17. Does the source propose to add terms and conditions for an alternative operating scenario or intra-facility trading of emissions? If Yes, identify the proposed conditions in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

Check here if an AI-001 Form is attached to provide more information for Part H. Enter AI-001 Form ID: **AI-**



RENEWABLE OPERATING PERMIT APPLICATION

AI-001: ADDITIONAL INFORMATION

This information is required by Article II, Chapter 1, part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.

SRN: N6207	Section Number (if applicable): 2
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1. Additional Information ID AI-
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Additional Information

2. Is This Information Confidential?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Question H4: The landfill is became subject to a new applicable federal regulation - 40 CFR 62 Subpart OOO (Federal Plan), promulgated May 31, 2021, since the landfill did not receive an expansion in volume after July 14, 2017. The landfill is considered a "Legacy Controlled Landfill" under the Federal Plan. Additionally, the Landfill NESHAP (40 CFR 63 Subpart AAAA) was revised on March 26, 2020. This regulation became effective on September 27, 2021 and replaces all monitoring, operational and compliance standards of the Federal Plan, and some recordkeeping and reporting requirements.

EGLE has provided AQD template tables for both the revised Landfill NESHAP and the Federal Plan. These templates have been marked up to include only those provisions that continue to be applicable to Smiths Creek Landfill after September 27, 2021. The existing template table for 40 CFR 60 Subpart WWW that is in the current ROP should be removed.

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION**

EFFECTIVE DATE: June 7, 2018

ISSUED TO

Smiths Creek Landfill and Blue Water Renewables, LLC

State Registration Number (SRN): N6207

LOCATED AT

6779 Smiths Creek Road, Smiths Creek (Kimball), Michigan 48074-3508

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-N6207-2018

Expiration Date: June 7, 2023

Administratively Complete ROP Renewal Application
Due Between December 7, 2021 and December 7, 2022

This Renewable Operating Permit (ROP) is issued in accordance with and subject to Section 5506(3) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Pursuant to Michigan Air Pollution Control Rule 210(1), this ROP constitutes the permittee's authority to operate the stationary source identified above in accordance with the general conditions, special conditions and attachments contained herein. Operation of the stationary source and all emission units listed in the permit are subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

SOURCE-WIDE PERMIT TO INSTALL

Permit Number: MI-PTI-N6207-2018

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(5) of Act 451. Pursuant to Michigan Air Pollution Control Rule 214a, the terms and conditions herein, identified by the underlying applicable requirement citation of Rule 201(1)(a), constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. Operation of all emission units identified in the PTI is subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

Michigan Department of Environmental Quality

Joyce Zhu, Southeast Michigan District Supervisor

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AUTHORITY AND ENFORCEABILITY

For the purpose of this permit, the **permittee** is defined as any person who owns or operates an emission unit at a stationary source for which this permit has been issued. The **department** is defined in Rule 104(d) as the Director of the Michigan Department of Environmental Quality (MDEQ) or his or her designee.

The permittee shall comply with all specific details in the permit terms and conditions and the cited underlying applicable requirements. All terms and conditions in this ROP are both federally enforceable and state enforceable unless otherwise footnoted. Certain terms and conditions are applicable to most stationary sources for which an ROP has been issued. These general conditions are included in Part A of this ROP. Other terms and conditions may apply to a specific emission unit, several emission units which are represented as a flexible group, or the entire stationary source which is represented as a Source-Wide group. Special conditions are identified in Parts B, C, D and/or the appendices.

In accordance with Rule 213(2)(a), all underlying applicable requirements are identified for each ROP term or condition. All terms and conditions that are included in a PTI are streamlined, subsumed and/or is state-only enforceable will be noted as such.

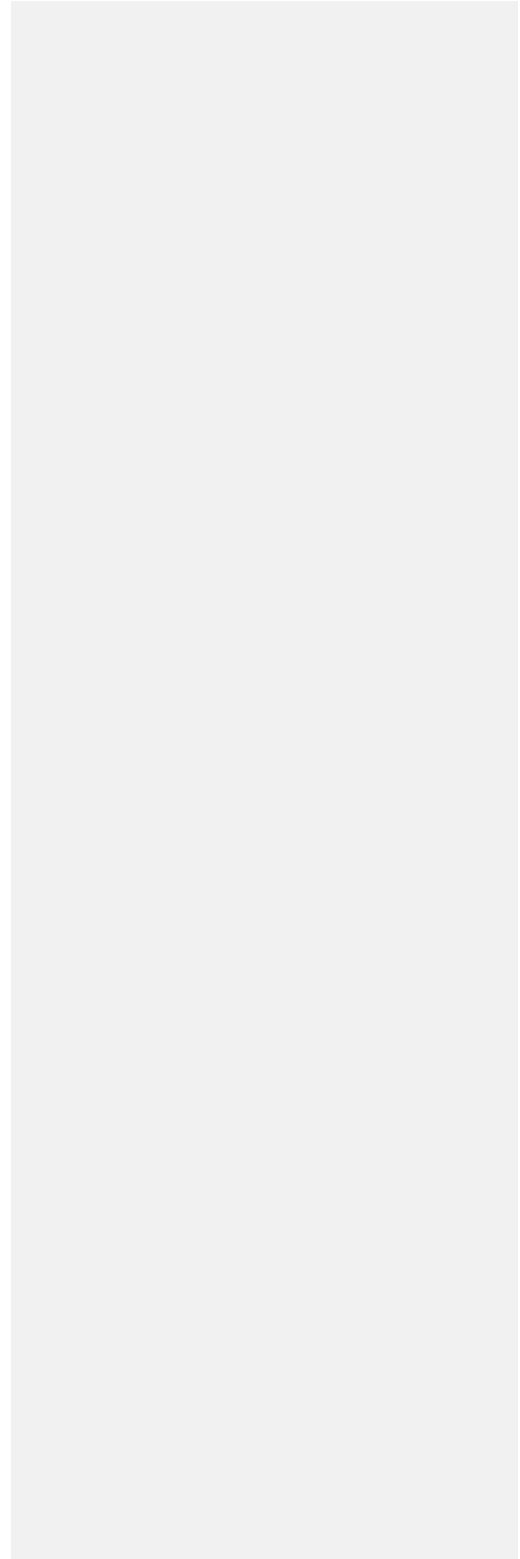
In accordance with Section 5507 of Act 451, the permittee has included in the ROP application a compliance certification, a schedule of compliance, and a compliance plan. For applicable requirements with which the source is in compliance, the source will continue to comply with these requirements. For applicable requirements with which the source is not in compliance, the source will comply with the detailed schedule of compliance requirements that are incorporated as an appendix in this ROP. Furthermore, for any applicable requirements effective after the date of issuance of this ROP, the stationary source will meet the requirements on a timely basis, unless the underlying applicable requirement requires a more detailed schedule of compliance.

Issuance of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

Section 1 – Smiths Creek Landfill

ROP No: MI-ROP-N6207-2018
Expiration Date: June 7, 2023
PTI No: MI-PTI-N6207-2018

SECTION 1 – Smiths Creek Landfill



A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**
- Those conditions that are hereby incorporated in a state-only enforceable Source-Wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R 336.1214a(5))**
- Those conditions that are hereby incorporated in a federally enforceable Source-Wide PTI pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

1. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as "state-only" are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**
2. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**
3. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee's own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**
4. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities: **(R 336.1213(1)(d))**
 - a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
 - c. Inspect, at reasonable times, any of the following:
 - i. Any stationary source.
 - ii. Any emission unit.
 - iii. Any equipment, including monitoring and air pollution control equipment.
 - iv. Any work practices or operations regulated or required under the ROP.
 - d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.
5. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq., and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

Section 1 – Smiths Creek Landfill

ROP No: MI-ROP-N6207-2018
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6. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**
7. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**
8. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

9. Any 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).² **(R 336.1370)**
10. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

11. Unless otherwise specified in this ROP, the permittee shall comply with Rule 301, which states, in part, "Except as provided in subrules 2, 3, and 4 of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:"² **(R 336.1301(1))**
 - a. A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
 - b. A limit specified by an applicable federal new source performance standard.

The grading of visible emissions shall be determined in accordance with Rule 303.
12. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
 - a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.¹ **(R 336.1901(a))**
 - b. Unreasonable interference with the comfortable enjoyment of life and property.¹ **(R 336.1901(b))**

Testing/Sampling

13. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1).² **(R 336.2001)**
14. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**
15. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(5))**

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Monitoring/Recordkeeping

16. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate. **(R 336.1213(3)(b))**
- The date, location, time, and method of sampling or measurements.
 - The dates the analyses of the samples were performed.
 - The company or entity that performed the analyses of the samples.
 - The analytical techniques or methods used.
 - The results of the analyses.
 - The related process operating conditions or parameters that existed at the time of sampling or measurement.
17. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

18. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a Responsible Official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**
19. A Responsible Official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507. **(R 336.1213(4)(c))**
20. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**
21. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP. **(R 336.1213(3)(c))**
- For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
 - For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
 - For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

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22. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following: **(R 336.1213(3)(c))**
 - a. Submitting a certification by a Responsible Official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
 - b. Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a Responsible Official which states that; “based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete.” The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.
23. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**
24. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**
25. 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 appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a Responsible Official in a manner consistent with the CAA.² **(R 336.1912)**

Permit Shield

26. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance, if either of the following provisions is satisfied. **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
 - a. The applicable requirements are included and are specifically identified in the ROP.
 - b. The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.

Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.
27. Nothing in this ROP shall alter or affect any of the following:
 - a. The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
 - b. The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
 - c. The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**

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- d. The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**
28. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
 - a. Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
 - b. Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**
 - c. Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
 - d. Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
 - e. State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**
29. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

30. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**
31. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**
32. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(10))**
33. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

34. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
 - a. If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
 - b. If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
 - c. If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
 - d. If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

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Renewals

35. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(9))**

Stratospheric Ozone Protection

36. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F.
37. If the permittee is subject to 40 CFR Part 82, and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

38. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).
39. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall comply with the requirements of 40 CFR Part 68, no later than the latest of the following dates as provided in 40 CFR 68.10(a):
- June 21, 1999,
 - Three years after the date on which a regulated substance is first listed under 40 CFR 68.130, or
 - The date on which a regulated substance is first present above a threshold quantity in a process.
40. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68.
41. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c). **(40 CFR Part 68)**

Emission Trading

42. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan's State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

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Permit to Install (PTI)

43. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule.² **(R 336.1201(1))**
44. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA.² **(R 336.1201(8), Section 5510 of Act 451)**
45. The terms and conditions of a PTI 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 the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI 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. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ.² **(R 336.1219)**
46. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months of the original PTI issuance date, or has been interrupted for 18 months, the applicable terms and conditions from that PTI, as incorporated into the ROP, shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P. O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI.² **(R 336.1201(4))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

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SOURCE-WIDE CONDITIONS

POLLUTION CONTROL EQUIPMENT

EU-OPENFLARE-SCL1, EU-VENTFLARE-SCL1

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	225 ² tpy	12-month rolling time period as determined at the end of each calendar month.	FG-FACILITY-BWR2	SC VI.1 Appendix 7-1	R 336.1205(3) 40 CFR 52.21(d)
² The 225 tons of carbon monoxide (CO) emissions limit includes the emissions from Section 1 (landfill) and Section 2 (SI RICE Engines). The emissions are predominantly from the engines.					

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period CO emission calculation records for source wide, as required by Special Condition I.1 and Appendix 7-2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² (R 336.1205(3), 40 CFR 52.21(d))
2. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period landfill gas usage records for FG-FACILITY-BWR2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² (R 336.1205(3), 40 CFR 52.21(c) and (d))

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))

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2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the New Source Performance Standards as specified in 40 CFR Part 60, Subpart A and Subpart WWW.² **(40 CFR Part 60 Subpart A and WWW)**
2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart AAAA.² **(40 CFR Part 63 Subparts A and AAAA)**
3. Each Responsible Official shall certify annually the compliance status of the stationary source with all stationary Source-Wide conditions. This certification shall be included as part of the annual certification of compliance as required in the General Conditions in Part A and Rule 213(4)(c). **(R 336.1213(4)(c))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EU-LANDFILL-SCL1	This emission unit represents the Municipal Solid Waste (MSW) Landfill.	12/31/1989	NA
EU-ALGCS-SCL1	This emission unit represents the active landfill gas collection system at the landfill. Gas moving equipment draws landfill gas from the wells and delivers it to an open flare. An open flare which combusts landfill gas at active landfill when not burned in SI RICE engines for electric power generation.	10/31/2002	FG-LGCS-SCL1
EU-OPENFLARE-SCL1	The flare is a combustor without enclosure or shroud.	10/31/2002	FG-CONTROLS-SCL1
EU-VENTFLARE-SCL1	Consists of six self-igniting (solar powered) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of the solar flares was performed on March 18, 2003; and, therefore, is not required by this table.	10/31/2002	FG-CONTROLS-SCL1
EU-BIOREACTOR-SCL1	Represents the portion of the landfill that is expected to be operated as a bioreactor.	08/03/2006	NA
EU-ASBESTOS-SCL1	Any active or inactive asbestos disposal site.	NA	NA
EU-GENERAC-28HP-NG (Generac)	NSPS 4J Emergency Generator. Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.	03/22/2015	FG-EMERGENS-SCL1
EU-KOHLER-18HP-NG (Kohler)	NSPS 4J Emergency Generator. Installed June 2016. Manufacture date is February 25, 2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.	06/2013	FG-EMERGENS-SCL1

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Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-PLGCS-SCL1	This emission unit represents the passive landfill gas collection system at the landfill. This passive system consists of a series of perforated pipes buried in the waste, which delivers landfill gas to one of the six self-igniting (solar power) vent flares where it is combusted.	10/31/2002	FG-LGCS-SCL1

**EU-LANDFILL-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-LANDFILL-SCL1: This emission unit represents the Municipal Solid Waste (MSW) Landfill.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Most of the landfill gas is collected and combusted in an open flare or combusted in the internal combustion engines to generate electricity.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Methane (CH ₄) concentration	500 ppm above background level	Calendar quarter, except as specified in 40 CFR 60.756(f) (See V.5)	Surface of Landfill	SC V.1 SC V.2	40 CFR 60.753(d) 40 CFR 60.755(c) 40 CFR 63.1955(a)(1)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall comply with the requirements in 40 CFR 63.1955(b) and 40 CFR 63.1960 through 40 CFR 63.1980. **(40 CFR 63.1945(b))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall have installed a collection and control system that captures the landfill gas generated within the landfill as required by 40 CFR 60.752(b)(2)(i)(C), 40 CFR 60.752(b)(2)(ii), and 40 CFR 60.752(b)(2)(iii). **(40 CFR 60.752(b)(2)(i)(C), 40 CFR 60.752(b)(2)(ii), 40 CFR 60.752(b)(2)(iii), 40 CFR 63.1955(a)(1))**
2. The permittee shall route all the collected landfill gas to at least one of the following:
 - a. A flare designed in accordance with 40 CFR 60.18. **(40 CFR 60.752(b)(2)(iii)(A), 40 CFR 63.1955(a)(1))**
 - b. A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at three percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test, required under 40 CFR 60.8 using the test methods specified in 40 CFR 60.754(d). **40 CFR 60.752(b)(2)(iii)(B), 40 CFR 63.1955(a)(1)**

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- c. A treatment system that processes the collected gas for subsequent sale or use. The treatment system shall be designed so that all emissions from any atmospheric vent(s) shall be subject to 40 CFR 60.752(b)(2)(iii)(B) or (C). **(40 CFR 60.752(b)(2)(iii)(C), 40 CFR 63.1955(a)(1))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. To determine if the 500 ppm above background methane concentration limit at the surface of the landfill is exceeded, the permittee shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. The permittee may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and the rationale for any site-specific deviations from the 30 meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing. **(40 CFR 60.753(d), 40 CFR 63.1955(a)(1))**
2. The permittee shall use the following procedures for compliance with the surface methane operational standard as provided in 40 CFR 60.753(d).
 - a. The permittee shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals (or a site-specific established spacing approved by the AQD) for each collection area on a quarterly basis (except as provided below in Special Condition V.5) using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 40 CFR 60.755(d). **(40 CFR 60.755(c)(1), 40 CFR 63.1955(a)(1))**
 - b. The background concentration shall be determined by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells. **(40 CFR 60.755(c)(2), 40 CFR 63.1955(a)(1))**
 - c. Surface emission monitoring shall be performed in accordance with Section 4.3.1 of Method 21 of Appendix A of 40 CFR Part 60, except that the probe inlet shall be placed within five to ten centimeters of the ground. Monitoring shall be performed during typical meteorological conditions. **(40 CFR 60.755(c)(3), 40 CFR 63.1955(a)(1))**
 - d. Any reading of 500 parts per million or more above background at any location shall be recorded as a monitored exceedance and the actions specified below shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of 40 CFR 60.753(d). **(40 CFR 60.755(c)(4), 40 CFR 63.1955(a)(1))**
 - i. The location of each monitored exceedance shall be marked and the location recorded. **(40 CFR 60.755(c)(4)(i), 40 CFR 63.1955(a)(1))**
 - ii. Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made and the location shall be re-monitored within 10 calendar days of detecting the exceedance. **(40 CFR 60.755(c)(4)(ii), 40 CFR 63.1955(a)(1))**
 - iii. If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified below (in condition **V.2.d.v**) shall be taken, and no further monitoring of that location is required until the action specified below (in condition **V.2.d.v**) has been taken. **(40 CFR 60.755(c)(4)(iii), 40 CFR 63.1955(a)(1))**
 - iv. Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified above (in conditions **V.2.d.ii** or **iii**) shall be re-monitored one month from the initial exceedance. If the one-month re-monitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the one-month re-monitoring shows an exceedance, the actions specified above (in condition **V.2.d.iii**) or below (in condition **V.2.d.v**) shall be taken. **(40 CFR 60.755(c)(4)(iv), 40 CFR 63.1955(a)(1))**
 - v. For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other collection device shall be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as

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upgrading the blower, header pipes or control device, and a corresponding timeline for installation may be submitted to the AQD for approval. **(40 CFR 60.755(c)(4)(v), 40 CFR 63.1955(a)(1))**

3. The permittee shall comply with the provisions in 40 CFR 60.755(c) with the following instrumentation specifications and procedures for surface emission monitoring devices: **(40 CFR 60.755(d), 40 CFR 63.1955(a)(1))**
 - a. The portable analyzer shall meet the instrument specifications provided in Section 3 of Method 21 of Appendix A of 40 CFR Part 60, except that "methane" shall replace all references to VOC. **(40 CFR 60.755(d)(1), 40 CFR 63.1955(a)(1))**
 - b. The calibration gas shall be methane, diluted to a nominal concentration of 500 ppm in air. **(40 CFR 60.755(d)(2), 40 CFR 63.1955(a)(1))**
 - c. To meet the performance evaluation requirements in Section 3.1.3 of Method 21 of Appendix A of 40 CFR Part 60, the instrument evaluation procedures of Section 4.4 of Method 21 of Appendix A of 40 CFR Part 60 shall be used. **(40 CFR 60.755(d)(3), 40 CFR 63.1955(a)(1))**
 - d. The calibration procedures provided in Section 4.2 of Method 21 of Appendix A of 40 CFR Part 60 shall be followed immediately before commencing a surface monitoring survey. **(40 CFR 60.755(d)(4), 40 CFR 63.1955(a)(1))**
4. The permittee shall keep the following written records pertaining to surface methane monitoring: **(R 336.1213(3))**
 - a. The route traversed including any areas not monitored because of unsafe conditions (i.e., truck traffic, construction, active face, dangerous areas, etc.) and areas included where visual observations indicate elevated levels of landfill gas. **(R 336.1213(3))**
 - b. The location(s) and concentrations of any reading above 500 ppm above background. **(40 CFR 60.755(c)(4)(i), R 336.1213(3))**
 - c. The meteorological conditions the day of the testing including wind speed, wind direction, temperature, and cloud cover). **(R 336.1213(3))**
5. The permittee shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in 40 CFR 60.755(d). Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the monitoring frequency for that landfill to quarterly. **(40 CFR 60.756(f), 40 CFR 63.1955(a)(1))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall implement a program to monitor on a monthly basis for cover integrity and implement cover repairs as necessary. **(40 CFR 60.755(c)(5), 40 CFR 63.1955(a)(1))**
2. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall maintain up-to-date, readily accessible, on-site records of the design capacity report which triggered 40 CFR 60.752(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within four hours. Either paper copy or electronic formats are acceptable. **(40 CFR 60.758(a), 40 CFR 63.1955(a)(1))**
3. Landfill owners or operators who convert design capacity from volume to mass or mass to volume to demonstrate that landfill design capacity is less than 2.5 million megagrams or 2.5 million cubic meters, as provided in the definition of "design capacity," shall keep readily accessible, on-site records of the annual recalculation of site-specific density, design capacity, and the supporting documentation. Off-site records may be maintained if they are retrievable within four hours. Either paper copy or electronic formats are acceptable. **(40 CFR 60.758(f), 40 CFR 63.1955(a)(1))**

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4. The permittee shall calculate and record the NMOC emission rate for purposes of determining when the system can be removed as provided in 40 CFR 60.752(b)(2)(v), using the equation presented in 40 CFR 60.754(b). **(40 CFR 60.754(b))**
5. If the permittee adds any liquids other than leachate in a controlled fashion to the waste mass and does not comply with the bioreactor requirements in 40 CFR 63.1947, 40 CFR 63.1955(c), and 40 CFR 63.1980(c) through (f), the permittee shall keep a record of calculations showing that the percent moisture by weight expected in waste mass to which liquid is added is less than 40 percent. The calculation must consider the waste mass, moisture content of the incoming waste, mass of the water added to the waste including leachate recirculation and other liquids addition, and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balances calculations can be used. The permittee shall document the calculations and the basis of the assumptions. **(40 CFR 63.1980(g))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be received by appropriate AQD district office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee shall submit an equipment removal report to the appropriate AQD District Supervisor 30 days prior to removal or cessation of operation of the control equipment. **(40 CFR 60.757(e), 40 CFR 63.1955(a)(1))**
 - a. The equipment removal report shall contain all of the following items:
 - i. A copy of the closure report submitted in accordance with 40 CFR 60.757(d). **(40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a)(1))**
 - ii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. **(40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a)(1))**
 - iii. A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired. **(40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a)(1))**
 - b. The AQD may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. **(40 CFR 60.757(e)(2), 40 CFR 63.1955(a)(1))**
5. The permittee shall submit reports which shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. The report shall include the location of each exceedance of the 500 parts per million methane concentration as provided above (Special Condition V.1) and the concentration recorded at each location for which an exceedance was recorded in the previous month. The report shall also include information on all deviations that occurred during the six-month reporting period. **(40 CFR 60.757(f)(5), 40 CFR 63.1955(a)(1), 40 CFR 63.1955(c), 40 CFR 63.1980(a))**
6. The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD district office and it shall be delivered or postmarked by March 15 for the reporting period of July 1 through December 31 of the previous year and by September 15 for the reporting period of January 1 through June 30 of the same year. **(40 CFR 63.10(a)(5), 40 CFR CFR 63.10(d)(5))**

See Appendix 8-1

VIII. STACK/VENT RESTRICTION(S)

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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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The collection and control system may be capped or removed provided that all the following conditions are met:
 - a. The landfill shall be a closed landfill as defined in 40 CFR 60.751. A closure report shall be submitted to the appropriate AQD District Office as provided in 40 CFR 60.757(d). **(40 CFR 60.752(b)(2)(v)(A), 40 CFR 63.1955(a)(1))**
 - b. The collection and control system shall have been in operation a minimum of 15 years. **(40 CFR 60.752(b)(2)(v)(B), 40 CFR 63.1955(a)(1))**
 - c. Following the procedures specified in 40 CFR 60.754(b), the calculated NMOC gas produced by the landfill shall be less than 50 megagrams per year on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart. **(40 CFR 60.752(b)(2)(v)(C), 40 CFR 63.1955(a)(1))**
2. The permittee shall submit a closure report to the appropriate AQD District Office within 30 days of waste acceptance cessation. The AQD may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the AQD, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). **(40 CFR 60.757(d), 40 CFR 63.1955(a)(1))**
3. If monitoring demonstrates that the operational requirements above in Special Condition V.1 are not met, corrective action shall be taken as specified above in Special Condition V.2. If corrective actions are taken as specified above in Special Condition V.2, the monitored exceedance is not a violation of the operational requirements in this section. **(40 CFR 60.753(g), 40 CFR 63.1955(a)(1))**
4. For the approval of collection and control systems that includes any alternatives to the operational standards, test methods, procedures, compliance measures, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions, the permittee shall follow the procedures in 40 CFR 60.752(b)(2). **(40 CFR 63.1955(c))**
5. The permittee shall comply with the requirements of 40 CFR Part 60, Subpart WWW. **(40 CFR 63.1955(a)(1))**
6. The permittee shall comply with the requirements of 40 CFR Part 63, Subpart AAAA, including the general provisions specified in Table 1 and the SSM requirements in 40 CFR 63.6. **(40 CFR 63.1955, 40 CFR 63.6)**
7. The permittee is no longer required to comply with the requirements of Subpart AAAA of Part 63 when it is no longer required to apply controls as specified in 40 CFR 60.752(b)(2)(v) of Subpart WWW. **(40 CFR 63.1950)**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**EU-ALGCS-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-ALGCS-SCL1: This emission unit represents the active landfill gas collection system at the landfill. Gas moving equipment draws landfill gas from the wells and delivers it to an open flare.

Flexible Group ID: FG-LGCS-SCL1

POLLUTION CONTROL EQUIPMENT

An open flare which combusts landfill gas at active landfill when not burned in SI RICE engines for electric power generation.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. In the 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 60.753(e), 40 CFR 63.1955(a))**
2. The permittee shall operate the collection system such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for:
 - a. Five years or more if active; or **(40 CFR 60.753(a)(1), 40 CFR 63.1955(a))**
 - b. Two years or more if closed or at final grade **(40 CFR 60.753(a)(2), 40 CFR 63.1955(a))**
3. The permittee shall operate the collection system with negative pressure at each wellhead except under the following conditions: **(40 CFR 60.753(b), 40 CFR 63.1955(a))**
 - a. A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided below (Special Condition VII.4). **(40 CFR 60.753(b)(1), 40 CFR 63.1955(a))**
 - b. Use of a geo-membrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan. **(40 CFR 60.753(b)(2), 40 CFR 63.1955(a))**
 - c. A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes shall be approved by the AQD. **(40 CFR 60.753(b)(3), 40 CFR 63.1955(a))**
4. The permittee shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55 °C and with a nitrogen level less than 20 percent or an oxygen level less than five percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher

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operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. **(40 CFR 60.753(c), 40 CFR 63.1955(a))**

5. The permittee shall operate the installed collection system to comply with the provisions in 40 CFR 60.753, 40 CFR 60.755, and 40 CFR 60.756. **(40 CFR 60.752(b)(2)(iv), 40 CFR 63.1955(a))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. An active collection system shall:
 - a. Be designed to handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment. **(40 CFR 60.752(b)(2)(ii)(A)(1), 40 CFR 63.1955(a))**
 - b. Be designed per the specifications in 40 CFR 60.752(b)(2)(i). Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of five years or more if active; or two years or more if closed at final grade. **(40 CFR 60.755(b), 40 CFR 60.752(b)(2)(ii)(A)(2), 40 CFR 63.1955(a))**
 - c. Collect gas at a sufficient extraction rate. **(40 CFR 60.752(b)(2)(ii)(A)(3), 40 CFR 63.1955(a))**
 - d. Be designed to minimize off-site migration of subsurface gas. **(40 CFR 60.752(b)(2)(ii)(A)(4), 40 CFR 63.1955(a))**
2. The permittee shall design the collection system so that all collected gases are vented to a control system designed and operated in compliance with 40 CFR 60.752(b)(2)(iii). **(40 CFR 60.753(e), 40 CFR 63.1955(a))**
3. When adding gas collectors to the active gas collection system, a sufficient density of gas collectors shall be installed in compliance as specified above (Special Condition IV.1). The permittee shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the appropriate AQD District Office, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards in NSPS WWW. **(40 CFR 60.755(a)(2), 40 CFR 63.1955(a))**
 - a. If the permittee is seeking to demonstrate compliance through the use of a collection system not conforming to the specifications provided in 40 CFR 60.759, then the permittee shall provide information that satisfies the AQD District Supervisor as specified in 40 CFR 60.752(b)(2)(i)(C), demonstrating that off-site migration is being controlled. **(40 CFR 60.755(a)(6), 40 CFR 63.1955(a))**
4. The permittee shall install a sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements at each wellhead. **(40 CFR 60.756(a), 40 CFR 63.1955(a))**
5. The permittee shall site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless alternative procedures have been approved by the appropriate AQD District Supervisor as provided in 40 CFR 60.752(b)(2)(i)(C) and (D):
 - a. The collection devices within the interior and along the perimeter areas shall be certified, by a professional engineer, to achieve comprehensive control of surface gas emissions. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat. **(40 CFR 60.759(a)(1), 40 CFR 63.1955(a))**
 - b. The sufficient density of gas collection devices determined above in Special Condition IV.5.a shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior. **(40 CFR 60.759(a)(2), 40 CFR 63.1955(a))**
 - c. The placement of gas collection devices determined above in Special Condition IV.5.a shall control all gas producing areas, except as provided below in Special Conditions IV.5.c.i and ii. **(40 CFR 60.759(a)(3), 40 CFR 63.1955(a))**
 - i. Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the District Supervisor upon request. **(40 CFR 60.759(a)(3)(i), 40 CFR 63.1955(a))**

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- ii. Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the AQD District Supervisor upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the equation in Appendix 7-1. **(40 CFR 60.759(a)(3)(ii), 40 CFR 63.1955(a)). See Appendix 7-1**
6. The permittee shall construct the gas collection devices using the following equipment or procedures:
 - a. The landfill gas extraction components shall be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system shall extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration. **(40 CFR 60.759(b)(1), 40 CFR 63.1955(a))**
 - b. Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations. **(40 CFR 60.759(b)(2), 40 CFR 63.1955(a))**
 - c. Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly shall include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness. **(40 CFR 60.759(b)(3), 40 CFR 63.1955(a))**
 7. The active gas collection system shall be designed convey the landfill gas to a control system in compliance with 40 CFR 60.752(b)(2)(iii) through the collection header pipe(s). The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures: **(40 CFR 60.759(c), 40 CFR 63.1955(a))**
 - a. For existing collection systems, the flow data shall be used to project the maximum flow rate. If no flow data exists, the procedures in 40 CFR 60.759(c)(2) shall be used. **(40 CFR 60.759(c)(1), 40 CFR 63.1955(a))**
 - b. For new collection systems, the maximum flow rate shall be in accordance with 40 CFR 60.755(a)(1). **(40 CFR 60.759(c)(2), 40 CFR 63.1955(a))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(3), the permittee shall measure gauge pressure in the gas collection header at each individual well, monthly. If a positive pressure exists, action shall be initiated to correct the exceedance within five calendar days, except for the three conditions allowed under 40 CFR 60.753(b) (Special Conditions III.3.a-c). If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial measurement of positive pressure. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the

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- exceedance may be submitted to the AQD for approval. **(40 CFR 60.755(a)(3), 40 CFR 60.756(a)(1), 40 CFR 63.1955(a))**
- a. If monitoring demonstrates that the negative pressure is not being met, then corrective action shall be taken as noted in 40 CFR 60.755(a)(3) (Special Condition VI.1.). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements. **(40 CFR 60.753(g), 40 CFR 63.1955(a))**
2. The permittee is not required to expand the gas collection system as required in 40 CFR 60.755(a)(3) (Special Condition VI.1) during the first 180 days after gas collection system startup. **(40 CFR 60.755(a)(4), 40 CFR 63.1955(a))**
 3. For the purpose of identifying whether excess air infiltration into the landfill is occurring, the permittee shall monitor each well monthly for temperature and oxygen as provided in 40 CFR 60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within five calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternative timeline for correcting the exceedance may be submitted to the AQD for approval. **(40 CFR 60.755(a)(5), 40 CFR 60.756(a)(2), 40 CFR 60.756(a)(3), 40 CFR 63.1955(a))**
 - a. If monitoring demonstrates that the temperature and oxygen levels are not being met, then corrective action shall be taken as noted above and specified in 40 CFR 60.755(a)(5). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements. **(40 CFR 60.753(g), 40 CFR 63.1955(a))**
 - b. Unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i), the oxygen shall be determined by an oxygen meter using Method 3A or 3C except that:
 - i. The span shall be set so that the regulatory limit is between 20 and 50 percent of the span; **(40 CFR 60.753(c)(i), 40 CFR 63.1955(a))**
 - ii. A data recorder is not required. **(40 CFR 60.753(c)(ii), 40 CFR 63.1955(a))**
 - iii. Only two calibration gases are required, a zero and span, and ambient air may be used as the span. **(40 CFR 60.753(c)(iii), 40 CFR 63.1955(a))**
 - iv. A calibration error check is not required. **(40 CFR 60.753(c)(iv), 40 CFR 63.1955(a))**
 - v. The allowable sample bias, zero drift, and calibration drift are ± 10 percent. **(40 CFR 60.753(c)(v), 40 CFR 63.1955(a))**
 4. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in 40 CFR 60.758(b)(1) (Special Condition VI.4.a-b) as measured during the compliance determination. Records of the control device vendor specifications shall be maintained until removal.
 - a. The maximum expected gas generation flow rate as calculated in 40 CFR 60.755(a)(1). The permittee may use another method to determine the maximum gas generation flow rate, if the method has been approved by the appropriate AQD District Office. **(40 CFR 60.758(b)(1)(i), 40 CFR 63.1955(a))**
 - b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 60.759(a)(1). **(40 CFR 60.758(b)(1)(ii), 40 CFR 63.1955(a))**
 5. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector; and the installation date and location of all newly installed collectors as specified under 40 CFR 60.755(b) (Special Condition IV.1.b). **(40 CFR 60.758(d), 40 CFR 60.758(d)(1), 40 CFR 63.1955(a))**
 6. The permittee shall keep readily accessible records of all collection and control system exceedances of the operational standards in 40 CFR 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance. **(40 CFR 60.758(e), 40 CFR 63.1955(a))**
 7. The permittee shall maintain the following information:

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- a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion. **(40 CFR 60.757(g)(1), 40 CFR 63.1955(a))**
- b. The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based. **(40 CFR 60.757(g)(2), 40 CFR 63.1955(a))**
- c. The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. **(40 CFR 60.757(g)(3), 40 CFR 63.1955(a))**
- d. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. **(40 CFR 60.757(g)(4), 40 CFR 63.1955(a))**
- e. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. **(40 CFR 60.757(g)(5), 40 CFR 63.1955(a))**
- f. The provisions for the control of off-site migration. **(40 CFR 60.757(g)(6), 40 CFR 63.1955(a))**
- g. The permittee shall maintain the dates of the landfill gas well installations, the age of the waste in which the landfill gas wells were installed, and the age of the in-place waste for each portion of the landfill. **(R 336.1213(3))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be received by appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be received by appropriate AQD district office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee shall submit to the appropriate AQD district office semi-annual reports for the gas collection system. Reports shall be received by the appropriate AQD district office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. For enclosed combustion devices and flares, reportable exceedances are defined under 40 CFR 60.758(c). The semi-annual reports for the gas collection system shall include the following information: **(40 CFR 60.757(f), 40 CFR 63.1980(a), 40 CFR 63.1955(a), 40 CFR 63.1965)**
 - a. Value and length of time for exceedance of applicable parameters monitored above in Special Conditions VI.1 and VI.3. **(40 CFR 60.757(f)(1))**
 - b. All periods when the collection system was not operating in excess of five days. **(40 CFR 60.757(f)(4))**
 - c. The date of installation and the location of each well or collection system expansion added pursuant to Special Conditions IV.1.b, VI.1, and VI.3. **(40 CFR 60.757(f)(6))**
 - d. Any deviations as listed in 40 CFR 63.1965. **(40 CFR 63.1965)**
 - e. The permittee shall record instances when a positive pressure occurs in efforts to avoid fire. **(40 CFR 60.753(b)(1))**
5. The permittee shall submit a startup, shutdown, and malfunction (SSM) report to the appropriate district office. It shall be delivered or postmarked by March 15 for the reporting period of July 1 through December 31 of the previous calendar year and by September 15 for the reporting period of January 1 through June 30 of the same year.

See Appendix 8-1

VIII. STACK/VENT RESTRICTION(S)

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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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. If monitoring demonstrates that the operational requirements above in Special Conditions III.3 through III.5 are not met, corrective action shall be taken as specified above in Special Conditions VI.1 and VI.3. If corrective actions are taken as specified above in Special Conditions VI.1 and VI.3, the monitored exceedance is not a violation of the operational requirements in Special Conditions III.3 through III.5. **(40 CFR 60.753(g), 40 CFR 63.1955(a))**
2. The above provisions in Special Conditions IV.1.b, VI.1 and VI.3 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 five days for collection systems. **(40 CFR 60.755(e), 40 CFR 63.1955(a))**
3. If the permittee is seeking to install a collection system that does not meet the specifications above in Special Conditions IV.5, IV.6, and IV.7, or is seeking to monitor alternative parameters to those required by 40 CFR 60.753 through 40 CFR 60.756, they shall provide information satisfactory to the appropriate AQD District Office as provided in 40 CFR 60.752(b)(2)(i)(B) and (C) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. The AQD may specify additional appropriate monitoring procedures. **(40 CFR 60.756(e), 40 CFR 63.1955(a))**
4. The permittee shall have developed and implemented a written SSM plan according to the provision in 40 CFR 63.6(e)(3) for EU-ALGCS-SCL1. A copy of the SSM plan shall be maintained on site. **(40 CFR 63.1960)**
5. The active landfill gas collection system shall also comply with all applicable requirements listed under FG-LGCS-SCL1 in Table D of this renewable operating permit. **(R 336.1213(3))**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**EU-OPENFLARE-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-OPENFLARE-SCL1: The flare is a combustor without enclosure or shroud. The initial performance testing for the open flare has already been performed (March 18, 2003, Derenzo and Associates, Inc. [Project No. 0301056, April 04, 2003]) and therefore, the test is not required by this table.

Flexible Group ID: FG-CONTROLS-SCL1

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall operate the flare in accordance with 40 CFR 60.18 except as noted in 40 CFR 60.754(e). **(40 CFR 60.752(b)(2)(iii)(A), 40 CFR 63.1955(a))**
2. The permittee shall operate the flare at all times when the collected gas is routed to it. **(40 CFR 60.753(f), 40 CFR 63.1955(a))**
3. The flare shall be operated with no visible emissions, as determined by the methods specified in 40 CFR 60.18(f), except for periods not to exceed a total of five minutes during any two consecutive hours. **(40 CFR 60.18(c)(1))**
4. The flare shall be operated 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. The flare shall be used only with the net heating value of the gas being combusted of 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted of 7.45 MJ/scm (200 Btu/scf) or greater if the flare is non-assisted. The net heating value of the gas being combusted shall be determined by the methods specified in 40 CFR 60.18(f). **(40 CFR 60.18(c)(3))**
6. Steam-assisted and 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. Steam-assisted and 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))**

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- b. Steam-assisted and 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))**
7. Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, V_{max} , as determined by the method specified in 40 CFR 60.18(f)(6). **(40 CFR 60.18(c)(5))**
8. Flares used to comply with provisions of 40 CFR Part 60, Subpart A shall be operated at all times when emissions may be vented to them. **(40 CFR 60.18(e))**
9. The permittee shall operate control system such that all collected gases are vented to a control system designed and operated in accordance with 40 CFR 60.752(b)(2)(iii). In the 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 shall contributing to venting of the gas to the atmosphere shall be closed within one hour. **(40 CFR 60.753(e), 40 CFR 63.1955(a))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain, and operate, according to the manufacturer's specifications a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. **(40 CFR 60.756(c)(1), 40 CFR 63.1955(a))**
2. A device that records flow to or bypass of the flare. The owner or operator shall either: **(40 CFR 60.756(c)(2), 40 CFR 63.1955(a))**
 - a. Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or
 - b. Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall install, calibrate, maintain, and operate according to the manufacturer's specifications, a heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame. **(40 CFR 60.756(c)(1), 40 CFR 63.1955(a))**
2. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep up-to-date, readily accessible records for the life of the open flare of the data listed in 40 CFR 60.758(b)(4) (Special Condition VI.3) as measured during the initial performance test or compliance determination. Records of subsequent tests or monitoring shall be maintained for a minimum of five years. Records of the open flare vendor specifications shall be maintained until removal. **(40 CFR 60.758(b), 40 CFR 63.1955(a))**
3. The permittee shall maintain records regarding the flare type (i.e., steam-assisted, air-assisted, or non-assisted), 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 open flare pilot flame or open flare flame monitoring and records of all periods of operations during which the pilot flame of the flare flame is absent. **(40 CFR 60.758(b)(4), 40 CFR 63.1955(a))**
4. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 CFR 60.756 (Special Condition VI.1), as

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well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. **(40 CFR 60.758(c))**

- a. The permittee shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device or the indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines, specified under 40 CFR 60.756. **(40 CFR 60.758(c)(2), 40 CFR 63.1955(a))**
 - b. The permittee shall keep up-to-date, readily accessible continuous records of the flame or flare pilot flame monitoring specified under 40 CFR 60.756(c) (Special Condition VI.1.a), and up-to-date, readily accessible records of all periods of operation in which the flame or flare pilot flame is absent. **(40 CFR 60.758(c)(4), 40 CFR 63.1955(a))**
5. The following records for the flare shall be maintained onsite:
- a. Records indicating presence of flare pilot flame. **(40 CFR 60.18(f)(2))**
 - b. The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in Appendix 7-1. **(40 CFR 60.18(f)(3))**
 - c. The actual exit velocity of the flare shall be calculated and recorded by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Federal Reference Test Methods 2, 2A, 2C, or 2D as appropriate, by the unobstructed (free) cross sectional area of the flare tip. **(40 CFR 60.18(f)(4))**
 - d. The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in Appendix 7-1. **(40 CFR 60.18(f)(5))**
 - e. The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in Appendix 7-1. **(40 CFR 60.18(f)(6))**

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semi-annual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee shall submit to the appropriate AQD District Office semiannual reports for the gas collection system. Reports shall be received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. For enclosed combustion devices and flares, reportable exceedances are defined under 40 CFR 60.758(c). The semiannual report shall contain:
 - a. Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(b). **(40 CFR 60.757(f)(1), 40 CFR 63.1980(a), 40 CFR 63.1955(a))**
 - 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. **(40 CFR 60.757(f)(2), 40 CFR 63.1980(a), 40 CFR 63.1955(a))**
 - c. Description and duration of all periods when the control device was not operating for a period exceeding one hour and length of time the control device was not operating. **(40 CFR 60.757(f)(3), 40 CFR 63.1980(a), 40 CFR 63.1955(a))**
5. The permittee shall submit an equipment removal report to the AQD 30 days prior to removal or cessation of operation of the open flare.
 - a. The equipment removal report shall contain all of the following items:
 - i. A copy of the closure report submitted in accordance with 40 CFR 60.757. **(40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a))**

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- ii. A copy of the initial performance test report demonstrating that the 15-year minimum control period has expired. **(40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a))**
 - iii. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. **(40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a))**
 - b. Additional information may be requested as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. **(40 CFR 60.757(e)(2), 40 CFR 63.1955(a))**
6. The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD District Office and it shall be delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of 40 CFR 60 Subparts A and WWW, Standard of Performance for Municipal Solid Waste Landfills as they apply to EU-OPENFLARE-SCL1. **(40 CFR 60 Subparts A and WWW)**
2. The permittee shall comply with all applicable provisions of 40 CFR 63 Subparts A and AAAA, National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as they apply to EU-OPENFLARE-SCL1. **(40 CFR 60 Subparts A and AAAA)**
3. The duration of start-up, shutdown, or malfunction for the open flare shall not exceed one hour. **(40 CFR 60.755(e), 40 CFR 63.1955(a))**
4. Compliance of 40 CFR Part 63, Part 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 in 40 CFR 60.756(c)(1) (Special Condition VI.1) are used to demonstrate compliance with the operating conditions for the open flare. The permittee shall have developed and implemented a written SSM for EU-OPENFLARE-SCL1. A copy of the SSM plan shall be maintained on site. **(40 CFR 63.1960)**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**EU-VENTFLARE-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-VENTFLARE-SCL1: Consists of six self-igniting (solar powered: Solar power charges 6-V batteries that produce sparks) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of the solar flares was performed on March 18, 2003, and, therefore, is not required by this table. Due to lack of gas generation, most flares are idle most of the times. When gas flow is detected by PLC, a flare lights up by a spark.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- Flares shall be designed for and operated with no visible emissions as determined by the methods specified in 40 CFR 60.18(f), except for periods not to exceed a total of five minutes during any two consecutive hours. **(40 CFR 60.18(c)(1), 40 CFR 60.752(b)(2)(iii)(A))**
- Passive flares shall be operated with a battery to provide a spark to re-ignite the flare as long as landfill gas of sufficient quality and quantity is present to sustain combustion. **(40 CFR 60.18(c)(2), 40 CFR 60.752(b)(2)(i), 40 CFR 63.1955(c), U.S. EPA Approved Final Control Plan, page 2)**
- Passive flares shall be used only if the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater. The net heating value of the gas being combusted shall be determined by the methods specified in 40 CFR 60.18(f). **(40 CFR 60.18(c)(3), 40 CFR 60.752(b)(2)(i), 40 CFR 63.1955(c), U.S. EPA Approved Final Control Plan, page 2)**
- Passive flares used to comply with provisions of 40 CFR Part 60 Subpart A shall have their ignition systems operated at all times when emissions may be vented to them. **(40 CFR 60.18(e), 40 CFR 60.752(b)(2)(iii)(A))**
- The permittee shall operate and maintain the passive flares in accordance with the manufacturer's recommendations, including, but not limited to, conducting periodic relight testing. **(R 336.1213(3), 40 CFR 63.6(e), EPA Approved Final Control Plan, manufacturer information enclosure)**

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IV. DESIGN/EQUIPMENT PARAMETER(S)

1. Flares shall be designed and operated in accordance with 40 CFR 60.18, and according to the U.S. EPA approved Final Control Plan. **(40 CFR 60.752(b)(2)(iii)(A), 40 CFR 60.752(b)(2)(i), 40 CFR 63.1955(c), U.S. EPA Approved Final Control Plan)**
2. The permittee shall install, calibrate, maintain, and operate the following equipment, associated with each passive flare, according to the manufacturer's specifications: **(40 CFR 60.756(c), 40 CFR 63.1955(a), U.S. EPA Approved Final Control Plan, manufacturer information enclosure)**
 - a. A battery and charging system, to provide spark to reignite the flare as long as landfill gas of sufficient quality and quantity is present to sustain combustion.
 - b. A thermocouple which indicates the presence of a flame.
3. The passive flares must be designed to meet the requirements of 40 CFR 60.18 with respect to exit velocities and visible emissions. The passive flare will be able to ignite and stay lit with a minimum of 30% methane. **(40 CFR 60.752(b)(2)(i), 40 CFR 63.1955(c), U.S. EPA Approved Final Control Plan, manufacturer information enclosure, page 5)**
4. Flares used to comply with 40 CFR 60.18 shall be steam-assisted, air-assisted, or non-assisted. **(40 CFR 60.18(c)(6), 40 CFR 60.752(b)(2)(iii)(A))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Weekly inspections of spark plug performance of the non-assisted flares shall be completed and records shall be kept onsite. In the event of a spark plug failure, the permittee has five days to correct the malfunction. If the malfunction cannot be corrected within five days, a deviation will be reported during semiannual SSM report.
2. The presence of a flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame. **(40 CFR 60.18(f)(2), 40 CFR 60.752(b)(2)(i), 40 CFR 63.1955(c), U.S. EPA Approved Final Control Plan, page 2)**
3. The net heating value of the gas being combusted in a flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). **(R 336.1213(3), 40 CFR 60.18(f)(3), 40 CFR 60.752(b)(2)(iii)(A))**
OR
The net heating value of gas being combusted in a flare will be determined using 40 CFR 60, Method 3C. **(40 CFR 60.752(b)(2)(i), 40 CFR 63.1955(c))**
4. The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be determined and recorded using the equation provided in 40 CFR 60.18(f)(5). **(R 336.1213(3), 40 CFR 60.18(f)(5), 40 CFR 60.752(b)(2)(iii)(A))**
5. The permittee shall perform the following monitoring on a monthly basis: **(40 CFR 60.752(b)(2)(i), 40 CFR 63.1955(c))**
 - a. Downloading of the data collected by the data logger.
 - b. Visual inspection of each flare to verify that components of the flare have not become damaged by weather conditions or vandalism.
6. The permittee shall monitor the flare to ensure that it is operated and maintained in conformance with its design and the provisions of 40 CFR Part 60 Subpart A and 40 CFR Part 60 Subpart WWW. **(40 CFR 60.18(d), 40 CFR 60.752(b)(2)(iii)(A))**

See Appendix 7-1

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VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The vent flares shall also comply with all applicable requirements listed under FG-CONTROLS-SCL1 in Table D of this renewable operating permit. **R 336.1213(3)**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**EU-BIOREACTOR-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-BIOREACTOR-SCL1: Represents the portion of the landfill that is expected to be operated as a bioreactor.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The bioreactor gas collection and control system shall be installed prior to the initiation of liquids addition. **(40 CFR 63.1947(c)(1))**
2. The gas collection and control system shall begin operating within 180 days after initiation of liquids or within 180 days of achieving a moisture content of 40 percent by weight, whichever is later. **(40 CFR 63.1947(c)(2))**
3. If the permittee chooses to calculate moisture content to demonstrate compliance with 40 CFR 63.1947(c)(2), the procedures delineated in 40 CFR 63.1908(g) and 40 CFR 63.1908(h) shall be used to determine when the moisture content within a bioreactor reaches 40 percent by weight. **(40 CFR 63.1947(c)(2))**
4. If a bioreactor is located at a MSW landfill that is not permanently closed and has a design capacity equal to or greater than 2.5 million Mg or 2.5 million m³, then it shall meet the requirements of 40 CFR 63.1955(a) and the requirements listed below:
 - a. The general provisions specified in Table 1 of 40 CFR Part 63 Subpart AAAA and 40 CFR 63.1960 through 40 CFR 63.1985 on the date the installation of the gas collection and control system is required. **(40 CFR 63.1955(d)(1))**
 - b. The extension of the collection and control system into each new cell or area of the bioreactor prior to initiation of liquids in that area instead of the schedule in 40 CFR 60.752(b)(2)(ii)(A)(2). **(40 CFR 63.1955(d)(2))**
5. The operator shall comply with the requirements of 40 CFR Part 60, Subpart WWW. **(40 CFR 63.1955(a)(1))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

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V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The owner or operator shall keep records as specified in 40 CFR, Part 60, Subpart WWW or in the Federal plan or EPA approved state or tribal plan that implements 40 CFR Part 60, Subpart Cc, whichever applies. **(40 CFR 63.1980(a))**
2. The owner or operator shall keep records and reports as specified in the general provisions of Table 1 of 40 CFR, Part 60, Subpart AAAA. **(40 CFR 63.1980(b))**
3. If any liquids other than leachate are added in a controlled fashion to the waste mass and these liquids do not comply with the bioreactor requirements in 40 CFR 63.1947, 40 CFR 63.1955(c), and 40 CFR 63.1980(c) through (f), then records of calculations shall be kept showing that the moisture by weight expected in the resulting waste mass is less than 40 percent. The calculation shall consider the waste mass, the moisture content of the incoming waste, the mass of water added to the waste including leachate recirculation and the addition of other liquids and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balance calculations may be used. The owner or operator shall document the calculations and provide the basis for any assumptions. A record of these calculations shall be kept until the cessation of liquid addition. **(40 CFR 63.1980(g))**
4. If an owner or operator calculates moisture content to establish the date on which the bioreactor is required to begin operating the collection and control system under 40 CFR 63.1947(a)(2) or (c)(2), a record of the calculations including the information specified in 40 CFR 63.1947(g) shall be maintained for five years. **(40 CFR 63.1980(h))**
5. Monitoring shall be performed to comply with 40 CFR, Part 60, Subpart WWW. **(40 CFR 63.1955(a)(1))**

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The annual report described in 40 CFR 60.757(f) shall be submitted every six months. **(40 CFR 63.1980(a))**
5. For bioreactors at new affected sources, the initial semiannual compliance report and performance test results described in 40 CFR 60.757(f) shall be submitted within 180 days after the compliance date required to begin operating the gas collection and control system as specified by 40 CFR 63.1947(a)(2). **(40 CFR 63.1980(c))**
6. If a semiannual compliance report is required to be submitted for a bioreactor and a conventional portion of the same landfill, the submittal of a subsequent semiannual compliance report for the bioreactor may be delayed in accordance with the following:

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- a. Until the date the initial or subsequent semiannual compliance report is due for the conventional portion of the landfill. **(40 CFR 63.1980(f)(1))**
 - b. The delay of the submittal of the subsequent compliance report for the bioreactor shall be no more than 12 months after the due date for the submittal of the initial semiannual compliance report and performance test results described in 40 CFR 60.757(f). The report shall cover the time period since the previous semiannual report for the bioreactor and cover a period of at least six months and no more than 12 months in duration. **(40 CFR 63.1980(f)(2))**
 - c. After submittal of the delayed subsequent compliance report for the bioreactor, all subsequent semiannual reports shall be submitted every six months on the same due date as the semiannual report for the conventional portion of the landfill. **(40 CFR 63.1980(f)(2))**
7. Within 90 days after the bioreactor achieves 40 percent moisture content by weight, the owner or operator shall report the results of the moisture content calculation, the date the bioreactor achieved 40 percent moisture content by weight, and the date which the collection and control system will be put into operation. **(40 CFR 63.1980(h))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

- 1. The owner or operator of a landfill which includes a bioreactor is no longer required to comply with the requirements of this subpart provided either of the conditions below are met:
 - a. The landfill meets the control system removal criteria in 40 CFR 60.752(b)(2)(v) of Part 60, Subpart WWW or the bioreactor meets the criteria for a nonproductive area of the landfill as specified in 40 CFR 60.759(a)(3)(ii) of Part 60, Subpart WWW. **(40 CFR 63.1952(a))**
 - b. The bioreactor portion of the landfill is a closed landfill as defined in 40 CFR 60.751, Subpart WWW, liquid addition to the bioreactor has permanently ceased, and liquids have not been added to the bioreactor for at least one year. A closure report for the bioreactor shall be submitted to the appropriate AQD district office as stipulated in 40 CFR 60.757(d) if all the above conditions are met. **(40 CFR 63.1952(b))**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**EU-ASBESTOS-SCL1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

EU-ASBESTOS-SCL1: Any active or inactive asbestos disposal site. This landfill accepts asbestos waste.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. If the landfill accepts asbestos-containing waste materials from a source covered under 40 CFR 61.149, 40 CFR 61.150, or 40 CFR 61.155, the permittee shall meet the following operational requirements:
 - a. Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of 40 CFR 61.154(c) or (d) must be met. **(40 CFR 61.154(a))**
 - b. Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of 40 CFR 61.154(c)(1) must be met. **(40 CFR 61.154(b))**
 - i. Warning signs must be displayed at all entrances and at intervals of 100 m (330 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:
 - (1) Be posted in such a manner and location that a person can easily read the legend. **(40 CFR 61.154(b)(1)(i))**
 - (2) Conform to the requirements of 51 cm by 36cm (20 inches by 14 inches) upright format signs specified in 29 CFR 1910.145(d)(4) and 40 CFR 61.154(b)(1). **(40 CFR 61.154(b)(1)(ii))**
 - (3) The permittee shall display the legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in 40 CFR 61.154(b)(1). Spacing between any two lines must be at least equal to the height of the upper of the two lines. **(40 CFR 61.154(b)(1)(iii))**
 - ii. The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public. **(40 CFR 61.154(b)(2))**
 - iii. Upon request and supply of appropriate information, the appropriate AQD District Supervisor will determine whether a fence or a natural barrier adequately deters access by the general public. **(40 CFR 61.154(b)(3))**

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- c. Rather than meet the no visible emission requirement of 40 CFR 61.154(a), at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:
 - i. Be covered with at least 15 centimeters (6 inches) of compacted non-asbestos-containing material. **(40 CFR 61.154(c)(1))**, or
 - ii. Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the appropriate AQD District Supervisor. For purposes of 40 CFR 61.154(c)(2), any used, spent, or other waste oil is not considered a dust suppression agent. **(40 CFR 61.154(c)(2))**
 - d. Rather than meet the no visible emission requirement of 40 CFR 61.154(a), use an alternative emissions control method that has received prior written approval by the appropriate AQD District Supervisor according to the procedures described in 40 CFR 61.149(c)(2). **(40 CFR 61.154(d))**
2. The permittee shall comply with the requirements of 40 CFR 61.154. **(40 CFR 61.154)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The placement of gas collection devices determined in paragraph 40 CFR 60.759(a)(1) shall control all gas producing areas, except as provided by 40 CFR 60.759 (a)(3)(i) and (a)(3)(ii).
 - a. Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under 40 CFR 60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or non-degradable material deposited in the area, and shall be provided to the AQD upon request. **(40 CFR 60.759(a)(3)(i)) (40 CFR 60.759(a)(3))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For all asbestos-containing waste material received, the permittee of the active waste disposal site shall:
 - a. Maintain waste shipment records that include the following information: **(40 CFR 61.154(e)(1))**
 - i. The name, address, and telephone number of the waste generator. **(40 CFR 61.154(e)(1)(i))**
 - ii. The name, address, and telephone number of the transporter(s). **(40 CFR 61.154(e)(1)(ii))**
 - iii. The quantity of the asbestos-containing waste material in cubic meters (cubic yards). **(40 CFR 61.154(e)(1)(iii))**
 - iv. The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. Report in writing to the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the disposal site, by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report. **(40 CFR 61.154(e)(1)(iv))**
 - v. The date of the receipt. **(40 CFR 61.154(e)(1)(v))**
 - b. As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator. **(40 CFR 61.154(e)(2))**
 - c. Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the local, State, or USEPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record) **(40 CFR 61.154(e)(3))**

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2. The permittee shall maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area storage. **(40 CFR 61.154(f))**
3. The permittee shall keep readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or non-degradable waste excluded from collection as provided in 40 CFR 60.759(a)(3)(i) as well as any nonproductive areas excluded from collection as provided in 40 CFR 60.759(a)(3)(ii). **(40 CFR 60.758(d)(2))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semi-annual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. Report shall be postmarked or received by appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee shall submit to the appropriate AQD District Supervisor, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities. **(40 CFR 61.154(h))**
5. The permittee shall furnish upon request, and make available during normal business hours for inspection by the AQD, all records required by 40 CFR Part 61. **(40 CFR 61.154(i))**
6. Notify the AQD Technical Programs Unit and appropriate AQD District Office in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the appropriate AQD District Office at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:
 - a. Scheduled starting and completion dates. **(40 CFR 61.154(j)(1))**
 - b. Reason for disturbing the waste. **(40 CFR 61.154(j)(2))**
 - c. Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the AQD may require changes in the emission control procedures to be used. **(40 CFR 61.154(j)(3))**
 - d. Location of any temporary storage site and the final disposal site. **(40 CFR 61.154(j)(4))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

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IX. OTHER REQUIREMENT(S)

NA

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FG-LGCS-SCL1	The landfill gas collection systems (active and passive) operated at the landfill.	EU-ALGCS-SCL1 (Active) EU-PLGCS-SCL1 (Passive)
FG-CONTROLS-SCL1	The control equipment operated at the landfill (both active and passive). One (1) open flare (Active Landfill) and six (6) self-igniting solar flares (Passive Landfill)	EU-OPENFLARE-SCL1 EU-VENTFLARE-SCL1
FG-EMERGENS-SCL1	Emergency engines subject to 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. New/Reconstructed emergency engines greater than 0 HP but less than 500 130 ordered on or after June 12, 2006, and manufactured after January 1, 2009	EU-GENERAC-28HP-NG (Generac) EU-KOHLER-18HP-NG (Kohler)

**FG-LGCS-SCL1
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

FG-LGCS-SCL1: The landfill gas collection systems (active and passive) operated at the landfill.

Emission Units: EU-ALGCS-SCL1 (active) and EU-PLGCS-SCL1 (passive)

POLLUTION CONTROL EQUIPMENT

One (1) open flare serving the active portion of the landfill and six (6) self-igniting solar flares serving the closed portion of the landfill. The solar flares were approved by the United States Environmental Protection Agency.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Except as described below, the permittee shall operate each interior wellhead in the landfill gas collection system with a nitrogen level less than 20 percent or an oxygen level less than five percent. The permittee may establish a higher nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. Upon completion of the horizontal collection system the permittee shall monitor temperature. **(40 CFR 60.753(c), 40 CFR 63.1955(a))**
2. Except as described below, 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 the 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 60.753(e), 40 CFR 63.1955(a))**
 - a. For the passive gas collection system, as approved by U.S. EPA, the requirement to close valves within one hour in the event of control device malfunction is satisfied by following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 60.753(e), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a) and (c))**
3. Except as described below, the permittee shall operate a control or treatment system at all times when the collected gas is routed to the system. **(40 CFR 60.753(f), 40 CFR 63.1955(a))**
 - a. For the passive gas collection system, as approved by U.S. EPA, the requirement to operate the vent flare at all times when the collected gas is routed to it is satisfied by the continuous ignition system and following the vent flare manufacturer's specified maintenance and test procedures. **(40 CFR 60.753(e), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a) and (c))**

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4. If monitoring demonstrates that the operational requirement in 40 CFR 60.753(b), (c), or (d) are not met, corrective action shall be taken as specified in 40 CFR 60.755(a)(3) through (5) or 40 CFR 60.755(c). If corrective actions are taken as specified in 40 CFR 60.755, the monitored exceedance is not a violation of the operational requirements in this section and is not considered to be a RO Permit deviation as specified in General Requirement 23, 24, 28 or 29 of Part A. **(40 CFR 60.753(g), 40 CFR 63.1955(a))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. A **passive** gas collection system shall comply with the following:
 - a. The provisions specified in 40 CFR 60.752(b)(2)(ii)(A)(1), (2), and (4). **(40 CFR 60.752(b)(2)(ii)(B)(1), 40 CFR 63.1955(a))**
 - b. The U.S. EPA Final Control Plan. **(40 CFR 60.752(b)(2)(i)(C), 40 CFR 63.1955(c), U.S. EPA approved Final Control Plan)**
2. For the purposes of determining sufficient density of gas collectors for compliance with 40 CFR 60.752(b)(2)(ii)(A)(2), the permittee shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the AQD, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards. **(40 CFR 60.755(a)(2), 40 CFR 63.1955(a))**
3. The permittee is not required to expand the landfill gas collection system as required in 40 CFR 60.755(a)(3) during the first 180 days after landfill gas collection system start-up. **(40 CFR 60.755(a)(4), 40 CFR 63.1955(a))**
4. The permittee may seek to demonstrate compliance with 40 CFR 60.752(b)(2)(ii)(A)(4) through the use of a landfill gas collection system not conforming to the specifications provided in 40 CFR 60.759 by providing information satisfactory to the AQD as specified in 40 CFR 60.752(b)(2)(i)(C) demonstrating that off-site migration is being controlled. **(40 CFR 60.755(a)(6), 40 CFR 63.1955(a))**
5. The permittee may seek to install a landfill gas collection system that does not meet the specifications in 40 CFR 60.759 or may seek to monitor alternative parameters to those required by 40 CFR 60.753 through 40 CFR 60.756 by providing information satisfactory to the AQD as provided in 40 CFR 60.752(b)(2)(B) and (C) describing the design and operation of the alternate landfill gas collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. **(40 CFR 60.756(e), 40 CFR 63.1955(a))**
6. For purposes of compliance with 40 CFR 60.753(a), the permittee shall place each well or design component as specified in the approved design plan as provided in 40 CFR 60.752(b)(2)(i). Each well shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of: **(40 CFR 60.755(b), 40 CFR 63.1955(a))**
 - a. Five years or more if active. **(40 CFR 60.755(b)(1), 40 CFR 63.1955(a))**
 - b. Two years or more if closed or at final grade. **(40 CFR 60.755(b)(2), 40 CFR 63.1955(a))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall monitor the nitrogen level of the landfill gas using Method 3A or 3C of appendix A of 40 CFR Part 60, unless an alternative test method is established as allowed by 40 CFR 60.752(b)(2)(i). **(40 CFR 60.753(c)(1), 40 CFR 63.1955(a))**
OR
The permittee shall monitor the oxygen level of the landfill gas using an oxygen meter as provided in Method 3A or 3C of appendix A of 40 CFR Part 60, except if: **(40 CFR 60.753(c)(2), 40 CFR 63.1955(a))**
 - a. The span shall be set so that the regulatory limit is between 20 and 50 percent of the span. **(40 CFR 60.753(c)(2)(i), 40 CFR 63.1955(a))**

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- b. A data recorder is not required. **(40 CFR 60.753(c)(2)(ii), 40 CFR 63.1955(a))**
 - c. Only two calibration gases are required, a zero and span, and ambient air may be used as the span. **(40 CFR 60.753(c)(2)(iii), 40 CFR 63.1955(a))**
 - d. A calibration error check is not required. **(40 CFR 60.753(c)(2)(iv), 40 CFR 63.1955(a))**
 - e. The allowable sample bias, zero drift, and calibration drift are plus or minus 10 percent. **(40 CFR 60.753(c)(2)(v), 40 CFR 63.1955(a))**
 - f. An alternative test method may be established as allowed by 40 CFR 60.752(b)(2)(i). **(40 CFR 60.753(c)(2), 40 CFR 63.1955(a))**
2. For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with 40 CFR 60.752(b)(2)(ii)(A)(1), the permittee shall use the equations provided in 40 CFR 60.755(a)(1)(i) or (ii). The k and Lo kinetic factors should be those published the most recent Compilation Air Pollutant Emission Factors (AP-42) or other site-specific values demonstrated to be appropriate and approved by the AQD. If k has determined as specified in 40 CFR 60.754(a)(4), the value of k determined from the test shall be used. A value of no more than 15 years shall be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure. **(40 CFR 60.755(a)(1), 40 CFR 63.1955(a))**
 - a. If a landfill gas collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, the equations in 40 CFR 60.755(a)(1)(i) and (ii). If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using the equations in 40 CFR 60.755(a)(1)(i) or (ii) or other methods shall be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment. **(40 CFR 60.755(a)(1)(iii), 40 CFR 63.1955(a))**
 3. For the purpose of identifying whether excess air infiltration into the landfill is occurring, the permittee shall monitor each well monthly for temperature and nitrogen or oxygen as provided in 40 CFR 60.753(c). If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within five calendar days. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the landfill gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. Any attempted corrective measure shall not cause exceedances of other operational or performance standards. An alternate timeline for correcting exceedances may be submitted to the AQD for approval. Upon completion of the horizontal collection system, oxygen (or nitrogen), temperature, and vacuum will be monitored. **(40 CFR 60.755(a)(5), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(c))**
 4. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep the following records:
 - a. A plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector shall be kept on file for the life of the collection system. **(40 CFR 60.758(d), 40 CFR 63.1955(a))**
 - b. The installation date and location of all newly installed collectors as specified under 40 CFR 60.755(b). **(40 CFR 60.758(d)(1), 40 CFR 63.1955(a))**
 - c. Documentation of the nature, date of deposition, amount, and location of asbestos-containing or non-degradable waste excluded from collection as provided in 40 CFR 40 CFR 60.759(a)(3)(i) as well as any non-productive areas excluded from collection as provided in 40 CFR 60.759(a)(3)(ii). **(40 CFR 60.758(d)(2), 40 CFR 63.1955(a))**
 - d. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for at least five years up-to-date, readily accessible records of all collection and control system exceedances of the operational standards in 40 CFR 60.753, the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance. **(40 CFR 60.758(e), 40 CFR 63.1955(a))**

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

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2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the specified methods in 40 CFR 60.755(a)(1) through (a)(6) shall be used to determine whether the gas collection system is in compliance with 40 CFR 60.752(b)(2)(ii). **(40 CFR 60.755(a), 40 CFR 63.1955(a))**
2. The permittee shall develop and implement a written startup, shutdown, and malfunction (SSM) plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site. Failure to develop, implement, or maintain a copy of the SSM plan is a deviation. **(40 CFR 63.1935(a)(3), 40 CFR 63.1945(b), 40 CFR 63.1960, 40 CFR 63.1965(c))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**FG-CONTROLS-SCL1
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

FG-CONTROLS-SCL1: The control equipment operated at the landfill (both active and passive).

Emission Units: EU-OPENFLARE-SCL1, EU-VENTFLARE-SCL1

POLLUTION CONTROL EQUIPMENT

One (1) open flare (Active Landfill) and six (6) self-igniting solar flares (Passive Landfill).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The open flare shall be operated within the parameter ranges established during the initial or most recent performance test. The operating parameters to be monitored are specified in 40 CFR 60.756. **(40 CFR 60.752(b)(2)(iii)(B)(2), 40 CFR 63.1955(a))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The control system shall be designed and operated to reduce NMOC by 98 weight-percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at three percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test, except for open flares which shall be determined as specified in 40 CFR 60.18, to be completed no later than 180 days after the initial start-up of the approved control system using the test methods specified in 40 CFR 60.754(d). **(40 CFR 60.752(b)(2)(iii)(B), 40 CFR 63.1955(a))**
2. The permittee may seek to demonstrate compliance with 40 CFR 60.752(b)(2)(iii) by using a control device other than an open flare or an enclosed combustor by providing information satisfactory to the AQD as provided in 40 CFR 60.752(b)(2)(i)(B) describing the operation of the alternate control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. **(40 CFR 60.756(d), 40 CFR 63.1955(a))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

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VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep the following records for the life of the control system: **(40 CFR 60.758(b), 40 CFR 63.1955(a))**
 - a. The maximum expected gas generation flow rate as calculated in 40 CFR 60.755(a)(1). The permittee may use another method to determine the maximum gas generation flow rate, if the method has been approved by the AQD. **(40 CFR 60.758(b)(1)(i), 40 CFR 63.1955(a))**
 - b. The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in 40 CFR 60.759(a)(1). **(40 CFR 60.758(b)(1)(ii), 40 CFR 63.1955(a))**
2. Except as provided in 40 CFR 60.752(b)(2)(i)(B), the permittee shall keep for five years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in 40 CFR 60.756 as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. **(40 CFR 60.758(c), 40 CFR 63.1955(a))**

See Appendix 7-1

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If the landfill is closed, the permittee shall submit a closure report to the AQD with the first annual Emissions Guidelines Report. The AQD may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR §258.60. If a closure report has been submitted to the AQD, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4). **(40 CFR 60.757(d), 40 CFR 63.1980(b), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(c))**
5. If the landfill is closed, the permittee shall submit an equipment removal report to the AQD 30 days prior to removal or cessation of operation of the control equipment. The equipment removal report shall contain all of the following items pursuant to 40 CFR 60.757(e)(1). **(40 CFR 60.757(e), 40 CFR 63.1955(a), 40 CFR 63.1980(b))**
 - a. A copy of the closure report submitted in accordance with 40 CFR 60.757(d). **(40 CFR 60.757(e)(1)(i), 40 CFR 63.1955(a))**
 - b. A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired. **(40 CFR 60.757(e)(1)(ii), 40 CFR 63.1955(a))**
 - c. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year. **(40 CFR 60.757(e)(1)(iii), 40 CFR 63.1955(a))**

The AQD may request such additional information as may be necessary to verify that all of the conditions for removal in 40 CFR 60.752(b)(2)(v) have been met. **(40 CFR 60.757(e)(2), 40 CFR 63.1955(a))**

6. Within 60 days of the completion of the initial performance test, the permittee, in order to comply with 40 CFR 60.752(b)(2)(iii), shall submit the following information with the initial performance test report required under 40 CFR 60.8: **(R 336.1931(f), 40 CFR 60.757(g), 40 CFR 63.1955(a), 40 CFR 63.1980(b))**
 - a. A diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors, or other gas extraction devices, including the locations of any areas excluded

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- from collection and the proposed sites for the future collection system expansion. **(40 CFR 60.757(g)(1), 40 CFR 63.1955(a))**
- b. The data upon which the sufficient density of wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing are based. **(40 CFR 60.757(g)(2), 40 CFR 63.1955(a))**
 - c. The documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based on the presence of asbestos or non-degradable material. **(40 CFR 60.757(g)(3), 40 CFR 63.1955(a))**
 - d. The sum of the gas generation flow rates for all areas from which collection wells have been excluded based on non-productivity and the calculations of gas generation flow rate for each excluded area. **(40 CFR 60.757(g)(4), 40 CFR 63.1955(a))**
 - e. The provisions for increasing gas mover equipment capacity with increased gas generation flow rate, if the present gas mover equipment is inadequate to move the maximum flow rate expected over the life of the landfill. **(40 CFR 60.757(g)(5), 40 CFR 63.1955(a))**
 - f. The provisions for the control of off-site migration. **(40 CFR 60.757(g)(6), 40 CFR 63.1955(a))**

See Appendix 8-1

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

- 1. The permittee shall develop and implement a written startup, shutdown, and malfunction (SSM) plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site. Failure to develop, implement, or maintain a copy of the SSM plan is a deviation. **(40 CFR 63.1935(a)(3), 40 CFR 63.1945(b), 40 CFR 63.1960))**
- 2. The permittee shall comply with the requirements in 40 CFR Part 63, Subpart AAAA, and 40 CFR 63.1960 through 63.1985. **(40 CFR 63.1935(a)(3), 40 CFR 63.1955(b))**
- 3. The permittee shall calculate the three-hour block averages used to demonstrate compliance in the same way they are calculated in 40 CFR Part 60, Subpart WWW, except that the data collected during the events listed below are not to be included in any average computed under subpart AAAA: **(40 CFR 63.1935(a)(3), 40 CFR 63.1975)**
 - a. Monitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments.
 - b. Startups
 - c. Shutdowns
 - d. Malfunctions

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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**FG-EMERGENS-SCL1
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION:

FG-EMERGENS-SCL1 (aka FG-NSPS JJJJ): Emergency engines subject to 40 CFR Part 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition (natural gas fired Spark Ignition) Internal Combustion Engines. Owners or operators of Emergency SI RICE are subject to this NSPS 4J if engine is manufactured after January 1, 2009. Emergency engines greater than 19 kW (25 HP) engine power are subject to emission rate standards.

1. Generac: Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22 kW - Natural Gas - 28 HP.
2. Kohler: Installed June 2013. Manufacture date is February 25, 2013. 14 kW - Natural Gas - 18 HP. Hence, Kohler (14 Kw / 18 HP < 19 kW / 25 HP) unit is not subject to NSPS 4J emissions standards.

Emission Units: EU-GENERAC-28HP-NG, EU-KOHLER-18HP-NG

1. EU-GENERAC-28HP-NG (Generac): Installed on March 22, 2015 (replacing old generator). Manufacture date is September 12, 2014. 22KW - Natural Gas - 28 HP. Gen Model: 0065510. Serial #: 9169036. Engine Mfg.: OHVI Engines. Engine Model: OJ9333.
2. EU-KOHLER-18HP-NG (Kohler): Installed June 2013. Manufacture date is February 25, 2013. 14KW - Natural Gas - 18 HP. Gen Model: 14RESAL. Serial #: SGM324GJP.

POLLUTION CONTROL EQUIPMENT

Each engine is a certified engine with catalytic controls

I. EMISSION LIMIT

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO _x	10 g/HP-hr ^c	Hourly	Each engine in FG-EMERGENS- SCL1	SC VI.3 OR SC V.1	40 CFR 60.4233(e) (Table 1)
2. CO	387 g/HP-hr	Hourly	Each engine in FG-EMERGENS- SCL1	SC VI.3 OR SC V.1	40 CFR 60.4233(e) (Table 1)

^c The emission standards applicable to emergency engines between 25 HP and 130 HP are in terms of NOX + HC.

Note: No emission limit for engines ≤ 25 HP SI (NG) RICE

II. MATERIAL LIMITS

1. The permittee shall burn only natural gas in each engine in FG-EMERGENS-SCL1 except as allowed in 40 CFR 60.4243(e). Owners and operators of stationary SI natural gas fired engines may operate their engines using propane for a maximum of 100 hours per year as an alternative fuel solely during emergency operations, but must keep records of such use. If propane is used for more than 100 hours per year in an engine that is not certified to the emission standards when using propane, the owners and operators are required to conduct a performance test to demonstrate compliance with the emission standards of 40 CFR 60.4233. **(R 336.1201(3), 40 CFR 60.4243(e))**

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III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall comply with the emission standards specified in 40 CFR 60.4233(d), (Special Condition I.1 and I.2) by purchasing an engine certified to the emission standards in 40 CFR 60.4231(a) through (c), as applicable, for the same engine class and maximum engine power. **(40 CFR 60.4243(a))**
2. At all times, the permittee must operate and maintain any emergency stationary reciprocating internal combustion engine (RICE), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. **(40 CFR 60.4243(b))**
3. There is no time limit on the use of emergency stationary RICE in emergency situations. **(40 CFR 60.4243(d))**
4. The permittee may operate each engine in FG-EMERGENS-SCL1 for no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engines beyond 100 hours per calendar year. **(40 CFR 60.4243(d))**
5. Each engine in FG-EMERGENS-SCL1 may operate up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance and testing as provided in 40 CFR 60.4243(d)(1) through (d)(3). The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for the permittee to supply non-emergency power as part of a financial arrangement with another entity. **(40 CFR 60.4243(d))**
6. The permittee shall operate and maintain each engine in FG-EMERGENS-SCL1 such that it meets the emission limits in SC I.1 and SC I.2 over the entire life of the engine. **(40 CFR 60.4234)**
7. If the permittee purchased a certified engine, according to procedures specified in 40 CFR Part 60 Subpart JJJJ, for the same model year, the permittee shall meet the following requirements for each engine in FG-EMERGENS-SCL1:
 - a. Operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions.
 - b. Keep a maintenance plan and the permittee may only change those engine settings that are permitted by the manufacturer. If you do not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine.
 - c. Meet the requirements as specified in 40 CFR 1068 Subparts A through D, as applicable.

If the permittee does not operate and maintain the certified engine and control device according to the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and be subject to testing to determine compliance with the emission limits. **(40 CFR 60.4243(b)(1) and (2))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall equip and maintain each engine in FG-EMERGENS-SCL1 with a non-resettable hours meter to track the operating hours. **(40 CFR 60.4237(b))**

V. TESTING/SAMPLING

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

1. If each engine in FG-EMERGENS-SCL1 is purchased as a certified engine but not installed, configured, operated, and maintained according to the manufacturer's emission-related written instructions, or the permittee changes emission-related settings in a way that is not permitted by the manufacturer, the permittee must demonstrate compliance as follows:

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- a. Conduct an initial performance test to demonstrate compliance with the applicable emission standards in 40 CFR 60.4233(e), within one year after each engine in FG-EMERGENS-SCL1 is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within one year after changing emission-related settings in a way that is not permitted by the manufacturer.
- b. If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4244.
- c. Conduct subsequent performance testing every 8,760 hours of engine operation or every three years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

If a performance test is required, no less than 30 days prior to testing, a complete test plan shall be submitted to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(40 CFR 60.8, 40 CFR 60.4243, 40 CFR 60.4244, 40 CFR 60.4245, 40 CFR Part 60 Subpart JJJJ)**

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall monitor and record the total hours of operation for each engine in FG-EMERGENS-SCL1 per calendar year, recorded through the non-resettable hours meter, in a manner acceptable to the District Supervisor, AQD. The permittee shall document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation. **(R 336.1205(1)(a), R 336.2803, R 336.2804, R 336.2810, 40 CFR 60.4243, 40 CFR 60.4245(b))**
2. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), R 336.2803, R 336.2804, 40 CFR 60.4243, 40 CFR 60.4245)**
3. The permittee shall keep, in a satisfactory manner, the following records for each engine in FG-EMERGENS-SCL1:
 - a. If certified: The permittee shall keep records of the documentation from the manufacturer that each engine in FG-EMERGENS-SCL1 is certified to meet the emission standards and information as required in 40 CFR Parts 90, 1048, 1054, and 1060, as applicable.
 - b. If non-certified: The permittee shall keep records of testing required in Special Condition V.1.

The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a), R 336.2803, R 336.2804, 40 CFR 60.4233(e), 40 CFR 60.4243, 40 CFR 60.4245(a))**

4. The permittee shall keep, in a satisfactory manner, the following records of maintenance activity for each engine in FG-EMERGENS-SCL1:
 - a. If certified: The permittee shall keep the manufacturer's emission-related written instructions and records demonstrating that each engine in FG-NSPS JJJJ has been maintained according to them, as specified in Special Condition III.8.
 - b. If non-certified: The permittee shall keep records of a maintenance plan, as required by 40 CFR 60.4243 and maintenance activities.

The permittee shall keep all records on file and make them available to the Department upon request. **(40 CFR 60.4243, 40 CFR 60.4245(a), 40 CFR Part 60 Subpart JJJJ)**

5. The permittee shall keep, in a satisfactory manner, either vendor emissions guarantees or the testing required by this Table, for each engine in FG-EMERGENS-SCL1. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a), R 336.2803, R 336.2804)**
6. If any engine in FG-EMERGENS-SCL1 does not meet the standards applicable to non-emergency engines for the applicable size and model year, then the permittee shall monitor and record the operation of each engine in FG-EMERGENS-SCL1 in emergency and non-emergency service that are recorded through the non-resettable

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hours meter, in a manner acceptable to the District Supervisor, AQD. The permittee shall document the time of operation of the engine and the reason the engine was in operation during that time. **(R 336.1205(1)(a), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) and (d), 40 CFR 60.4243, 40 CFR 60.4245(b))**

7. The permittee shall keep records of all notifications submitted to comply with 40 CFR Part 60 Subpart JJJJ, as required by this Table, and all documentation supporting any notification. **(40 CFR 60.4245(a))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD's District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

1. The permittee shall comply with the provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subpart A and Subpart JJJJ, as they apply to FG-EMERGENS-SCL1. **(40 CFR Part 60 Subparts A and JJJJ)**
2. The permittee shall comply with the provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart ZZZZ, as they apply to FG-EMERGENS-SCL1, upon startup. **(40 CFR Part 63 Subparts A and ZZZZ)**

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1-1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO _{2e}	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
EU	Emission Unit	gr	Grains
FG	Flexible Group	HAP	Hazardous Air Pollutant
GACS	Gallons of Applied Coating Solids	Hg	Mercury
GC	General Condition	hr	Hour
GHGs	Greenhouse Gases	HP	Horsepower
HVLP	High Volume Low Pressure*	H ₂ S	Hydrogen Sulfide
ID	Identification	kW	Kilowatt
IRSL	Initial Risk Screening Level	lb	Pound
ITSL	Initial Threshold Screening Level	m	Meter
LAER	Lowest Achievable Emission Rate	mg	Milligram
MACT	Maximum Achievable Control Technology	mm	Millimeter
MAERS	Michigan Air Emissions Reporting System	MM	Million
MAP	Malfunction Abatement Plan	MW	Megawatts
MDEQ	Michigan Department of Environmental Quality	NMOC	Non-methane Organic Compounds
MSDS	Material Safety Data Sheet	NO _x	Oxides of Nitrogen
NA	Not Applicable	ng	Nanogram
NAAQS	National Ambient Air Quality Standards	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM10	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSR	New Source Review	pph	Pounds per hour
PS	Performance Specification	ppm	Parts per million
PSD	Prevention of Significant Deterioration	ppmv	Parts per million by volume
PTE	Permanent Total Enclosure	ppmw	Parts per million by weight
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
		µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

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Appendix 2-1. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3-1. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4-1. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5-1. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6-1. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 1 (Smiths Creek). Therefore, this appendix is not applicable.

Appendix 7-1. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in EU-ALGCS-SCL1, EU-OPENFLARE-SCL1, and EU-VENTFLARE-SCL1.

1. Calculation used to determine NMOC emissions from any nonproductive area

The following shall be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the District Supervisor upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the following equation: (40 CFR 60.759(a)(3)(ii), 40 CFR 63.1955(a))

$$Q_i = 2 k L_o M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

where,

Q_i = NMOC emission rate from the i th section, megagrams per year

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k = methane generation rate constant, year⁻¹

L_0 = methane generation potential, cubic meters per megagram solid waste

M_i = mass of the degradable solid waste in the i th section, megagram

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of nonmethane organic compounds, parts per million by volume

3.6×10^{-9} = conversion factor

The values for k and C_{NMOC} determined in field testing shall be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_0 and C_{NMOC} provided in 40 CFR 60.754(a)(1) or the alternative values from 40 CFR 60.754(a)(5) shall be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in 40 CFR 60.759(a)(3)(i). **(40 CFR 60.759(a)(3)(iii), 40 CFR 63.1955(a))**

2. Net Heating Value of the gas being combusted in the flare:

The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). **(40 CFR 60.18(f)(3))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

where:

H_T = Net heating value of the sample,

MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \text{Constant} \cdot 1.740 \times 10^{-7} \left(\frac{1}{\text{ppm}} \right) \left(\frac{\text{g mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

where the standard temperature for $\left(\frac{\text{g mole}}{\text{scm}} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 60.17); and

H_i = Net heat of combustion of sample component i , kcal/g mole at 25°C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 or 88 or D4809-95 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

3. Calculation of V_{\max} steam-assisted and non-assisted flares

The maximum permitted velocity, V_{\max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(5). **(40 CFR 60.18(f)(5))**

$$\text{Log}_{10}(V_{\max}) = (H_T + 28.8) / 31.7$$

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V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined above

4. Calculation of V_{max} for air-assisted flares

The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(6). **(40 CFR 60.18(f)(6))**

$V_{max} = 8.706 + 0.7084 (H_T)$

V_{max} = Maximum permitted velocity, m/sec

8.706=Constant

0.7084=Constant

H_T =The net heating value as determined above

Appendix 8-1. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

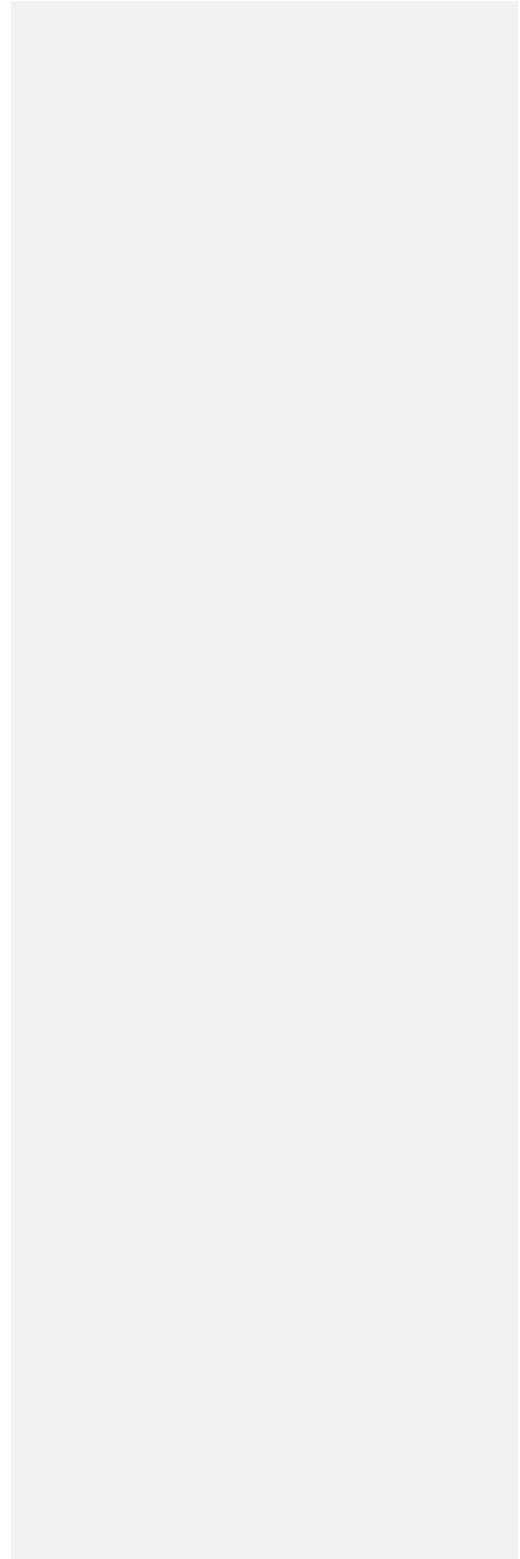
B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

Section 2 – Blue Water Renewables, LLC

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SECTION 2 – Blue Water Renewables, LLC



A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**
- Those conditions that are hereby incorporated in a state-only enforceable Source-Wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R 336.1214a(5))**
- Those conditions that are hereby incorporated in a federally enforceable Source-Wide PTI pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

4. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as "state-only" are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**
5. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**
6. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee's own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**
9. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities: **(R 336.1213(1)(d))**
 - a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
 - c. Inspect, at reasonable times, any of the following:
 - i. Any stationary source.
 - ii. Any emission unit.
 - iii. Any equipment, including monitoring and air pollution control equipment.
 - iv. Any work practices or operations regulated or required under the ROP.
 - d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.
10. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq., and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

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11. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**
12. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**
13. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

10. Any 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).² **(R 336.1370)**
11. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

13. Unless otherwise specified in this ROP, the permittee shall comply with Rule 301, which states, in part, "Except as provided in subrules 2, 3, and 4 of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:"² **(R 336.1301(1))**
 - a. A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
 - b. A limit specified by an applicable federal new source performance standard.

The grading of visible emissions shall be determined in accordance with Rule 303.

14. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
 - a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.¹ **(R 336.1901(a))**
 - b. Unreasonable interference with the comfortable enjoyment of life and property.¹ **(R 336.1901(b))**

Testing/Sampling

16. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1).² **(R 336.2001)**
17. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**
18. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(5))**

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Monitoring/Recordkeeping

18. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate. **(R 336.1213(3)(b))**
- The date, location, time, and method of sampling or measurements.
 - The dates the analyses of the samples were performed.
 - The company or entity that performed the analyses of the samples.
 - The analytical techniques or methods used.
 - The results of the analyses.
 - The related process operating conditions or parameters that existed at the time of sampling or measurement.
19. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

22. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a Responsible Official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**
23. A Responsible Official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507. **(R 336.1213(4)(c))**
24. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**
25. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP. **(R 336.1213(3)(c))**
- For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
 - For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
 - For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

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26. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following: **(R 336.1213(3)(c))**
- a. Submitting a certification by a Responsible Official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
 - b. Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a Responsible Official which states that; “based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete.” The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.
27. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**
28. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**
29. 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 appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a Responsible Official in a manner consistent with the CAA.² **(R 336.1912)**

Permit Shield

27. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance, if either of the following provisions is satisfied. **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
- a. The applicable requirements are included and are specifically identified in the ROP.
 - b. The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.
- Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.
28. Nothing in this ROP shall alter or affect any of the following:
- d. The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
 - e. The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
 - f. The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**

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- e. The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**
- 29. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
 - f. Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
 - g. Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**
 - h. Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
 - i. Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
 - j. State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**
- 34. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

- 35. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**
- 36. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**
- 37. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(10))**
- 38. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

- 35. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
 - a. If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
 - b. If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
 - c. If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
 - d. If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

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Renewals

38. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(9))**

Stratospheric Ozone Protection

39. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F.
40. If the permittee is subject to 40 CFR Part 82, and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

42. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).
43. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall comply with the requirements of 40 CFR Part 68, no later than the latest of the following dates as provided in 40 CFR 68.10(a):
- June 21, 1999,
 - Three years after the date on which a regulated substance is first listed under 40 CFR 68.130, or
 - The date on which a regulated substance is first present above a threshold quantity in a process.
44. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68.
45. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c). **(40 CFR Part 68)**

Emission Trading

47. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan's State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

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Permit to Install (PTI)

48. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule.² **(R 336.1201(1))**
49. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA.² **(R 336.1201(8), Section 5510 of Act 451)**
50. The terms and conditions of a PTI 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 the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI 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. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ.² **(R 336.1219)**
51. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months of the original PTI issuance date, or has been interrupted for 18 months, the applicable terms and conditions from that PTI, as incorporated into the ROP, shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P. O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI.² **(R 336.1201(4))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

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B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

SOURCE-WIDE CONDITIONS

POLLUTION CONTROL EQUIPMENT

Entire facility: Both Smiths Creek Landfill (~~N6207~~) and Blue Water Renewables, LLC (~~P0262 that is subsumed into N6207~~)

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	225 ² ^a tpy	12-month rolling time period as determined at the end of each calendar month.	FG-FACILITY-BWR2	SC VI.1 and Appendix 7-2	R 336.1205(3) 40 CFR 52.21(d)

^a The 225 tons of carbon monoxide (CO) emissions limit includes the emissions from Section 1 (landfill).

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period CO emission calculation records for source wide, as required by Special Condition I.1 and Appendix 7-2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² **R 336.1205(3), 40 CFR 52.21(d)**
2. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period landfill gas usage records for FG-FACILITY-BWR2. The permittee shall keep all records on file at the facility and make them available to the Department upon request.² **(R 336.1205(3), 40 CFR 52.21(c) and (d))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

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2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8-2

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the ~~New Source Performance Standards Federal Plan~~ as specified in 40 CFR Part ~~6062~~, Subpart ~~A and Subpart WWWOOO~~.² **(40 CFR Part 602 Subpart A and WWWOOO)**
2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart AAAA.² **(40 CFR Part 63 Subparts A and AAAA)**
3. Each Responsible Official shall certify annually the compliance status of the stationary source with all stationary Source-Wide conditions. This certification shall be included as part of the annual certification of compliance as required in the General Conditions in Part A and Rule 213(4)(c). **(R 336.1213(4)(c))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EU-TREATMENTSYS- BWR2	This emission unit treats landfill gas before it is used for electrical generation. The treatment system removes particulate to at least the 10 micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion during subsequent use. The treatment of the LFG ensures that a high percentage of NMOC will be destroyed in the internal combustion engines (spark ignition, lean burn, reciprocating internal combustion engine Caterpillar G3520C, 2,233 bhp at 100% load engines and associated generator producing 1.6 megawatt gross electrical output).	06/01/2011	NA
EU-ICENGINE1-BWR2	Spark ignition, lean burn, reciprocating internal combustion engine (Caterpillar G3520C, 2,233 bhp at 100% load) for combusting treated landfill gas to produce electricity (1.6 megawatt gross electrical output).	06/01/2011	FG-ICENGINES- BWR2
EU-ICENGINE2-BWR2	Spark ignition, lean burn, reciprocating internal combustion engine (Caterpillar G3520C, 2,233 bhp at 100% load) for combusting treated landfill gas to produce electricity (1.6 megawatt gross electrical output).	06/01/2011	FG-ICENGINES- BWR2

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**EU-TREATMENTSYS-BWR2
 EMISSION UNIT CONDITIONS**

EGLE has prepared new templates for 40 CFR 63 Subpart AAAA and 40 CFR 62 Subpart OOO to replace this now-obsolete Landfill NSPS (40 CFR 60 Subpart WWW). See templates provided in this application, which replaces this section.

DESCRIPTION

EU-TREATMENTSYS-BWR2: This emission unit treats landfill gas before it is used for electrical generation. The treatment system removes particulate to at least the 10-micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion during subsequent use. The treatment of the LFG ensures that a high percentage of NMOC will be destroyed in the internal combustion engines (spark ignition, lean burn, reciprocating internal combustion engine Caterpillar G3520C, 2,233 bhp at 100% load engines and associated generator producing 1.6 megawatt gross electrical output).

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatments system shall be subject to 40 CFR 60.752(b)(2)(iii)(A) or (B).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- The permittee shall operate the treatment system at all times when the collected gas is routed to the treatment system.² ~~(40 CFR 60.753(f))~~
- The permittee shall operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system shall be subject to 40 CFR 60.752(b)(2)(iii)(A) or (B).² ~~(40 CFR 60.752(b)(2)(iii)(C), 40 CFR 63.1955(a))~~
- The permittee shall operate the treatment system to comply with the provisions of 40 CFR 60.753(e) and (f) and 60.756(d).² ~~(40 CFR 60.752(b)(2)(iv), 40 CFR 63.1955(a))~~

IV. DESIGN/EQUIPMENT PARAMETER(S)

- The treatment system shall be designed and installed as approved by AQD.² ~~(40 CFR 60.752(b)(2)(iii)(C), 40 CFR 60.752(b)(2)(i)(D), 40 CFR 63.1955(a))~~

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

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NA

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

1. ~~The permittee shall keep up-to-date, readily accessible records of all control system exceedances of the operational standards in 40 CFR 60.753.² **(40 CFR 60.758(e), 40 CFR 63.1955(a))**~~
2. ~~The permittee shall keep records of all preventive maintenance performed in accordance with the preventive maintenance plan (PMP) prepared pursuant to Special Condition IX.3.² **(R 336.1201(3), 40 CFR 60.756(d))**~~
3. ~~The permittee shall provide information to the AQD as provided in 40 CFR 60.752(b)(2)(i)(B) describing the operation of the control device, the operating parameters which would indicate proper performance, and appropriate monitoring procedures. The AQD shall review the information and either approve it or request that additional information be submitted. The AQD may specify additional appropriate monitoring procedures.² **(40 CFR 60.756(d))**~~

See Appendices 3-2, 4-2, and 7-2

VII. REPORTING

1. ~~The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD District Office, delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² **(40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))**~~
2. ~~The permittee shall submit to the appropriate AQD District Office semi-annual reports for the landfill gas treatment system. The report shall be received by appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² **(40 CFR 60.757(f), 40 CFR 63.1980(a), 40 CFR 63.1955(a))**
 - a. ~~Value and length of time for exceedance of applicable parameters monitored under 40 CFR 60.756(d).² **(R 336.1213(3), 40 CFR 60.757(f)(1), 40 CFR 63.1980(a), 40 CFR 63.1955(a))**~~
 - b. ~~Description and duration of all periods when the gas stream is diverted from the treatment system through a bypass line or the indication of bypass flow.² **(R 336.1201(3))**~~
 - c. ~~Description and duration of all periods when the treatment system was not operating for a period exceeding one hour and length of time the control device was not operating.² **(40 CFR 60.757(f)(3), 40 CFR 63.1980(a), 40 CFR 63.1955(a))**~~
 - d. ~~Description and duration of all periods when the treatment system was not operated in accordance with the operating parameters and monitoring procedures that were part of the plan in Special Condition VII.1.² **(R 336.1201(3))**~~~~
3. ~~The permittee shall submit the startup, shutdown, and malfunction (SSM) report to the appropriate AQD district office and it shall be delivered or postmarked by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.² **(40 CFR 63.10(a)(5), 40 CFR 63.10(d)(5))**~~
4. ~~Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**~~
5. ~~Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**~~
6. ~~Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(e))**~~

See Appendix 8-2

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The provisions of 40 CFR 60.755 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 one hour for the treatment system.² ~~(40 CFR 60.755(e), 40 CFR 63.1955(a))~~
2. The permittee shall have developed and implemented a written SSM plan according to the provision in 40 CFR 63.6(e)(3) for EU-TREATMENTSYS-BWR2. A copy of the SSM plan shall be maintained on site.² ~~(40 CFR 63.1960, 40 CFR 63.1965(c))~~
3. The permittee shall have developed and implemented a written preventive maintenance plan (PMP) for EU-TREATMENTSYS-BWR2. At a minimum, the plan shall include a schedule of maintenance activities consistent with the equipment manufacturers' recommendations, and the operating variables that will be monitored to detect a malfunction or failure. A copy of the PMP shall be maintained on site.² ~~(R 336.1201(3), R 336.1911, 40 CFR 60.756(d))~~

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).
²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FG-ICENGINES-BWR2	Two (2) reciprocating internal combustion engines (RICE) that will only combust treated landfill gas for fuel. Each engine has an associated generator set for producing electricity (PTI No. 163-09D)	EU-ICENGINE1-BWR2 EU-ICENGINE2-BWR2

FG-ICENGINES-BWR2
FLEXIBLE GROUP CONDITIONS

EGLE has prepared a new template for “Existing Landfill Gas Spark Ignition Greater Than 500 bhp” – see template provided in this application, which replaces this section.

DESCRIPTION

FG-ICENGINES-BWR2 (may also be referred to as FG-ICENGINES): Two (2) reciprocating internal combustion engines (RICE) that will only combust treated landfill gas for fuel. Each engine has an associated generator set for producing electricity (PTI No. 163-09D).

Emission Units: EU-ICENGINE1-BWR2 (may also be referred to as EU-ICENGINE1) and EU-ICENGINE2-BWR2 (may also be referred to as EU-ICENGINE2)

POLLUTION CONTROL EQUIPMENT

Air-to-fuel ratio controller on each engine.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	16.3 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC-V.1	R-336.1205 40 CFR 52.21(d)
2. CO	5.0 ² g/bhp-hr or 610 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC-V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
3. NO _x	3.0 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC-V.1	40 CFR 52.21(c) and (d)
4. NO _x	2.0 ² g/bhp-hr or 150 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC-V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
5. Hydrogen Chloride (HCl)	0.51 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC-V.1	R-336.1225

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Pollutant	Limit	Time-Period/ Operating Scenario	Equipment	Testing/ Monitoring Method	Underlying Applicable Requirements
6. VOC	1.0 ² g/bhp-hr or 80 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC-V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
7. Formaldehyde	2.12 ² pph ¹ (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC-V.3	R 336.1225(2)
8. SO ₂	6.21 ² pph (applies to each engine)	Hourly	EU-ICENGINE1- BWR2 and EU-ICENGINE2- BWR2	SC-V.1	40 CFR 52.21(c) and (d)
9. SO ₂	54.4 ² tpy ^A	12-month rolling time period, as determined at the end of each calendar month	FG-ICENGINES- BWR2	SC-V.4 SC-VI.2 and Appendix A	R 336.1205(3)

^AThis limit is based on the calculation in Appendix 7-2

II. MATERIAL LIMIT(S)

Material	Limit	Time-Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall *only* burn landfill gas in FG-ICENGINES-BWR2 that has been treated in a system which complies with 40 CFR 60.752(b)(2)(iii)(C).² **(R 336.1225, 40 CFR 60.752(b)(2)(iii)(c))**
2. No later than 60 days after issuance of this permit, the permittee shall submit to the AQD District Supervisor, for review and approval, an updated malfunction abatement/preventative maintenance plan for FG-ICENGINES-BWR2. After approval of the malfunction abatement/preventative maintenance plan by the AQD District Supervisor, the permittee shall not operate FG-ICENGINES-BWR2 unless the malfunction abatement/preventative maintenance plan, 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:²
 - 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.

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~~If the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the malfunction abatement/preventative maintenance plan to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. (R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d))~~

- ~~3. The permittee shall operate and maintain each engine in FG-ICENGINES-BWR2 such that it meets the emission limits established, over the entire life of the engine.² (40 CFR 60.4234, 40 CFR 60.4243(b))~~
- ~~4. If the permittee purchased a non-certified engine or a certified engine operating in a non-certified manner, the permittee shall keep a maintenance plan for each engine in FG-ICENGINES-BWR2 and shall, to the extent practicable, maintain and operate each engine in a manner consistent with good air pollution control practice for minimizing emissions.² (40 CFR 60.4243(b))~~
- ~~5. Each engine in FG-ICENGINES-BWR2 shall operate in a manner which reasonably minimizes HAP emissions.² (40 CFR 63.6625(c))~~
- ~~6. Each engine in FG-ICENGINES-BWR2 shall operate in a manner which minimizes time spent at idle during startup and minimize the startup time to a period needed for appropriate and safe loading of each engine, not to exceed 30 minutes.² (40 CFR 63.6625(h))~~

IV. DESIGN/EQUIPMENT PARAMETER(S)

- ~~1. The permittee shall not operate any engine in FG-ICENGINES-BWR2 unless that engine's air/fuel ratio controller is installed, maintained and operated in a satisfactory manner.² (R 336.1702, R 336.1910)~~
- ~~2. The permittee shall equip and maintain FG-ICENGINES-BWR2 with non-resettable hours meters to track the operating hours.² (40 CFR 60.4243)~~
- ~~3. The permittee shall equip FG-ICENGINES-BWR2 with a device to monitor and record the total landfill gas fuel usage for FG-ICENGINES-BWR2 on a continuous basis.² (R 336.1205, R 336.1225, 40 CFR 63.6625(c))~~
- ~~4. The design capacity of each engine in FG-ICENGINES-BWR2 shall not exceed 2,233 bhp, as specified by the equipment manufacturer.² (R 336.1205, R 336.1225, R 336.1702)~~

V. TESTING/SAMPLING

~~Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))~~

- ~~1. Within every five years from the date of completion of the most recent stack test, the permittee shall verify NO_x, HCl, CO, SO₂ emission rates from each engine in FG-ICENGINES-BWR2, by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in the table below:²~~

Pollutant	Test Method Reference
NO _x	40 CFR Part 60, Appendix A
SO ₂	40 CFR Part 60, Appendix A
CO	40 CFR Part 60, Appendix A
Hydrogen Chloride	40 CFR Part 60, Appendix A

~~An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 30 days prior to testing, 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 testing, including any modifications to the method in the test protocol that are proposed after initial submittal. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and~~

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~~District Office within 60 days following the last date of the test. (R 336.1205, R 336.1225, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) and (d))~~

- ~~2. Except as provided in 40 CFR 60.4243(b), the permittee shall conduct an initial performance test for each engine in FG-ICENGINES-BWR2 within one year after startup of the engine and every 8,760 hours of operation (as determined through the use of a non-resettable hour meter) or three years, whichever occurs first, to demonstrate compliance with the emission limits in 40 CFR 60.4233(e), and as established in this permit, unless the engines have been certified by the manufacturer as required by 40 CFR Part 60 Subpart JJJJ and the permittee maintains the engine as required by 40 CFR 60.4243(a)(1). If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4244. No less than 30 days prior to any testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The permittee shall not test without prior approval of the test plan by AQD. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.² (40 CFR 60.4243, 40 CFR 60.4244, 40 CFR Part 60 Subpart JJJJ)~~
- ~~3. Within every five years from the date of completion of the most recent stack test, the permittee shall verify formaldehyde emission rates from each engine in FG-ICENGINES-BWR2 at maximum routine operating conditions, by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.² (R 336.1225(2), R 336.2001, R 336.2003, R 336.2004)~~
- ~~4. The permittee shall verify the hydrogen sulfide (H₂S) or total reduced sulfur (TRS) content of the landfill gas burned in FG-ICENGINES-BWR2 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. If at any time, the H₂S (TRS equivalent) concentration of the landfill gas sample exceeds 1,300 ppmv, the permittee shall sample and record the H₂S (TRS equivalent) concentration of the landfill gas daily and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken. Once the H₂S (TRS equivalent) concentration of the landfill gas determined from the daily samples are maintained below 1,300 ppmv, for one week after an exceedance, the permittee may resume weekly monitoring and recordkeeping. No less than 30 days prior to the initial test for each type of gas sampling, 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 shall keep all records on file at the facility and make them available to the Department upon request.² (R 336.1205(3), R 336.1225, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21 (c) and (d))~~

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

- ~~1. The permittee shall continuously monitor, in a satisfactory manner, the total landfill gas fuel usage and the hours of operation for FG-ICENGINES-BWR2.² (40 CFR 52.21(c) and (d), 40 CFR Part 60 Subpart JJJJ)~~
- ~~2. The permittee shall calculate and record the SO₂ emission rates from FG-ICENGINES-BWR2 using the equation in Appendix 8-2, C. The calculations shall utilize, at a minimum, weekly gas sampling data collected (Special Condition V.4), the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test. All records shall be kept on file at the facility and make them available to the Department upon request.² (R 336.1205(3)), 40 CFR 52.21 (c) and (d))~~
- ~~3. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.² (R 336.1205, R 336.1225, R 336.1702, 40 CFR 52.21(c) and (d))~~

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- ~~4. The permittee shall maintain the following record for each engine in FG-ICENGINES-BWR2. The following information shall be recorded and kept on file at the facility:²~~
- ~~a. Engine manufacturer;~~
 - ~~b. Date engine was manufactured;~~
 - ~~c. Engine model number and model year;~~
 - ~~d. Maximum engine power;~~
 - ~~e. Engine serial number;~~
 - ~~f. Engine specification sheet;~~
 - ~~g. Date of initial startup of the engine; and~~
 - ~~h. Date engine was removed from service at this stationary source.~~

~~All of the above information shall be stored in a format acceptable to the AQD District Supervisor. (R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702, R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d))~~

- ~~5. The permittee shall maintain records of all information necessary for all notifications and reports for each engine in FG-ICENGINES-BWR2, as specified in these special conditions as well as that information necessary to demonstrate compliance with the emission limits of this permit. This information shall include, but shall not be limited to the following:²~~
- ~~a. Compliance tests and any testing required under the special conditions of this permit;~~
 - ~~a. Monitoring data for the hours of operation, volumetric flow rate and landfill gas usage of each engine;~~
 - ~~b. Calculated amount of landfill gas combusted in each engine on a monthly and 12-month rolling basis;~~
 - ~~c. Hours of operation on a monthly and 12-month rolling basis;~~
 - ~~d. Monthly average Btu content of the landfill gas burned;~~
 - ~~e. Manufacturer's data, specifications, and operating and maintenance procedures;~~
 - ~~f. Maintenance activities conducted according to the PM/MAP;~~
 - ~~g. All calculations necessary to show compliance with the limits contained in this permit.~~

~~All of the above information shall be stored in a format acceptable to the AQD District Supervisor. (R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d), 40 CFR Part 60 Subpart JJJJ, 40 CFR 63.6625(e))~~

See Appendix 7-2

VII. REPORTING

- ~~1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))~~
- ~~2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))~~
- ~~3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))~~
- ~~4. The permittee shall submit an initial notification as required by 40 CFR 60.7(a)(1) for each engine in FG-ICENGINES-BWR2 if the engine(s) installed is/are not certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231. The notification shall include the information below, as specified in 40 CFR 60.4245 (c)(1) through (5).²~~
- ~~a. Name and address of the owner or operator. (40 CFR 60.4245(c)(1))~~
 - ~~b. The address of the affected source. (40 CFR 60.4245(c)(2))~~
 - ~~c. Engine information including engine manufacturer, model, model year, date of manufacture, maximum engine power, engine displacement, engine family, serial number. (40 CFR 60.4245(c)(3))~~

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- d. Emission control equipment. ~~(40 CFR 60.4245(c)(4))~~
- e. Fuel used. ~~(40 CFR 60.4245(c)(5))~~

The permittee shall submit the initial notification to the AQD District Supervisor in an acceptable format within 30 days of commencing construction of any engine in FGICENGINES. ~~(40 CFR Part 60, Subpart JJJJ)~~

- 5. The permittee shall submit an annual report in accordance with Table 7 of 40 CFR Part 63, Subpart ZZZZ to the appropriate AQD district office by no later than January 31. The following information shall be included in this annual report:² ~~(40 CFR 63.6650(g), 40 CFR 63.6650(b)(5))~~
 - a. The fuel flow rate and the heating values that were used in the permittee's calculations. Also, the permittee must demonstrate that the percentage of heat input provided by landfill gas or digester gas is equivalent to 10 percent or more of the total fuel consumption on an annual basis. ~~(40 CFR 63.6650(g)(1))~~
 - b. The operating limits provided in the permittee's federally enforceable permit, and any deviations from these limits. ~~(40 CFR 63.6650(g)(2))~~
 - c. Any problems or errors suspected from the fuel flow rate meters. ~~(40 CFR 63.6650(g)(3))~~

See Appendix 8-2

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVICENGINE1	46 ²	38 ²	R 336.1225 40 CFR 52.21 (c) and (d)
2. SVICENGINE2	46 ²	38 ²	R 336.1225 40 CFR 52.21 (c) and (d)

IX. OTHER REQUIREMENT(S)

- 1. The permittee shall comply with all applicable provisions of the New Source Performance Standards as specified in 40 CFR Part 60, Subpart A and Subpart JJJJ, as they apply to FGICENGINES.² ~~(40 CFR Part 60 Subpart A and JJJJ)~~
- 2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart ZZZZ, as they apply to FGICENGINES.² ~~(40 CFR Part 63, Subparts A and ZZZZ)~~

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).
²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

Section 2 – Blue Water Renewables, LLC

ROP No: MI-ROP-N6207-2018

Expiration Date: June 7, 2023

PTI No: MI-PTI-N6207-2018

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES**Appendix 1-2. Acronyms and Abbreviations**

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO _{2e}	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
EU	Emission Unit	gr	Grains
FG	Flexible Group	HAP	Hazardous Air Pollutant
GACS	Gallons of Applied Coating Solids	Hg	Mercury
GC	General Condition	hr	Hour
GHGs	Greenhouse Gases	HP	Horsepower
HVLP	High Volume Low Pressure*	H ₂ S	Hydrogen Sulfide
ID	Identification	kW	Kilowatt
IRSL	Initial Risk Screening Level	lb	Pound
ITSL	Initial Threshold Screening Level	m	Meter
LAER	Lowest Achievable Emission Rate	mg	Milligram
MACT	Maximum Achievable Control Technology	mm	Millimeter
MAERS	Michigan Air Emissions Reporting System	MM	Million
MAP	Malfunction Abatement Plan	MW	Megawatts
MDEQ	Michigan Department of Environmental Quality	NMOC	Non-methane Organic Compounds
MSDS	Material Safety Data Sheet	NO _x	Oxides of Nitrogen
NA	Not Applicable	ng	Nanogram
NAAQS	National Ambient Air Quality Standards	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM10	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSR	New Source Review	pph	Pounds per hour
PS	Performance Specification	ppm	Parts per million
PSD	Prevention of Significant Deterioration	ppmv	Parts per million by volume
PTE	Permanent Total Enclosure	ppmw	Parts per million by weight
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
		µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

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Appendix 2-2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3-2. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4-2. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5-2. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6-2. Permits to Install

~~At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 2 (Blue Water Renewables, LLC). Therefore, this appendix is not applicable. The following table lists any PTIs issued or ROP revision applications received since the effective date of the previously issued ROP No. MI-ROP-P0262-2012. Those ROP revision applications that are being issued concurrently with this ROP renewal are identified by an asterisk (*). Those revision applications not listed with an asterisk were processed prior to this renewal.~~

~~Source-Wide PTI No MI-PTI-P0262-2012a dated August 18, 2015 is being reissued as Source-Wide PTI No. MI-PTI-N6207-18.~~

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)
163-09D, dated June 1, 2017	201700078*, dated June 21, 2017	PTI revision to increase the amount of allowable hydrogen sulfide (H₂S) content of the landfill gas to 1,300 ppmv prior to being burned in the two existing landfill gas fired engines, located at 6797 Smiths Creek Road, Smiths Creek, Michigan.	EUTREATMENTSYS EUIENGINE1 EUIENGINE2

Appendix 7-2. Emission Calculations

Specific emission calculations to be used with monitoring, testing or recordkeeping data are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible group Special Conditions. Therefore, this appendix is not applicable.

Appendix 8-2. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

C. Other Reporting - Calculations

**Permit No. 163-09D APPENDIX A
 Procedures for Calculating Emissions**

The permittee shall demonstrate compliance with the emission limits in this permit by vendor data, stack testing, and/or gas testing.

Vendor Data or Stack Testing:

The permittee shall use emission factors from vendor data or from source specific testing (if stack test data is available, use most recent stack test data), as available for each emission unit included in FGFACILITY. The permittee shall use emission factors contained in the most recent AP-42 (Compilation of Air Pollutant Emission Factors) or the most recent FIRE (Factor Information Retrieval) database if vendor or stack testing data is not available. If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions. The permittee shall document the source of each emission factor used in the calculations.

Calculation for Monthly SO₂ Emissions:

The following calculation for SO₂ emissions shall utilize the monthly average of the weekly (or daily, if required) H₂S concentration measurements from test data collected, the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test.

SO₂ Emissions (tons per month)

$$= \frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} \times \frac{1.1733 \text{ mols Sulfur}}{\text{ft}^3} \times \frac{34.08 \text{ grams}}{\text{mol Sulfur}} \times \frac{\text{pound}}{453.59 \text{ grams}}$$

$$\times \frac{1 \text{ ton}}{2,000 \text{ pounds}} \times \frac{1.88 \text{ SO}_2}{\text{H}_2\text{S}} \text{ Molecular Weight Ratio} \times \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} \times \text{Monthly Landfill Gas Usage (ft}^3\text{/month)}$$

This is the template for 40 CFR Part 63, Subpart AAAA - National Emission Standards for Hazardous Air Pollutants (NESHAP) for a Municipal Solid Waste (MSW) landfill that has accepted waste since November 8, 1987, or has additional capacity for waste deposition and meets any one of the following three criteria: is a major source as defined in 40 CFR 63.2, is collocated with a major source as defined in 40 CFR 63.2, is an area source landfill that has a design capacity equal to or greater than 2.5 million megagrams (Mg) and 2.5 million cubic meters (m³) and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year (Mg/yr) NMOC as calculated according to 40 CFR 63.1959.

This template is meant to be inserted into the ROP shell document along with the associated parts and appendices that are specific to this template.

Included in this template is Part D, Flexible Group Special Conditions including the Flexible Group Summary Table.

D. FLEXIBLE GROUP SPECIAL CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FGLANDFILL-AAAA NOTE: These requirements are included in the documents for Section 1 of the ROP for Smith’s Creek Landfill	This flexible group represents the general MSW landfill with a required collection and control system. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EULANDFILL EUACTIVECOLL EUTREATMENTSYS EUOPENFLARE EUVENTFLARE
FGACTIVECOLL-AAAA & FGPASSIVECOLL-AAAA NOTE: These requirements are included in the documents for Section 1 of the ROP for Smith’s Creek Landfill	This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUACTIVECOLL & EU-PASSIVECOLL
FGTREATMENTSYS-AAAA	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUTREATMENTSYS
FGOPENFLARE-AAAA NOTE: These requirements are included in the documents for Section 1 of the ROP for Smith’s Creek Landfill	Open (non-enclosed) flare is an open combustor without enclosure or shroud. This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.	EUOPENFLARE
FGVENTFLARE-AAAA NOTE: These requirements are included in the documents for Section 1 of the ROP for Smith’s Creek Landfill	This flexible group contains 40 CFR Part 63, Subpart AAAA requirements as they pertain to a passive gas collection system. Self-igniting (solar powered) flares are open combustors and are not enclosed or shrouded.	EUVENTFLARE

<p>FGTREATMENTSYS-AAAA FUNCTIONAL GROUP CONDITIONS</p>

DESCRIPTION

This emission unit treats landfill gas before it is used for electrical generation. The treatment system removes particulate to at least the 10 micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion during subsequent use. The treatment of the LFG ensures that a high percentage of NMOC will be destroyed in the internal combustion engines (spark ignition, lean burn, reciprocating internal combustion engine Caterpillar G3520C, 2,233 bhp at 100% load engines and associated generator producing 1.6 megawatt gross electrical output). This flexible group contains 40 CFR Part 63, Subpart AAAA requirements.

Flexible Group ID: EUTREATMENTSYS

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatment system subject to 40 CFR 63.1959(b)(2)(iii)(A) or (B).

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate the treatment system at all times when the collected gas is routed to the treatment system. **(40 CFR 63.1958(f))**
2. The permittee must operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system must comply with 40 CFR 63.1959(b)(2)(iii)(A) or (B). **(40 CFR 63.1959(b)(2)(iii)(C) and (D))**
3. The permittee must develop a site-specific treatment system monitoring plan as required in 40 CFR 63.1983(b)(5)(ii). The plan must at a minimum contain the following: **(40 CFR 63.1961(g))**
 - a. Monitoring of filtration, de-watering, and compression parameters that ensure the treatment system is operating properly for each intended end use of the treated landfill gas. **(40 CFR 63.1983(b)(5)(ii)(A))**
 - b. Monitoring methods, frequencies, and operating ranges for each monitored operating parameter based on manufacturer's recommendations or engineering analysis for each intended end use of the treated landfill gas. **(40 CFR 63.1983(b)(5)(ii)(B))**
 - c. Documentation of the monitoring methods and ranges, along with justification for their use. **(40 CFR 63.1983(b)(5)(ii)(C))**
 - d. List of responsible staff (by job title) for data collection. **(40 CFR 63.1983(b)(5)(ii)(D))**
 - e. Processes and methods used to collect the necessary data. **(40 CFR 63.1983(b)(5)(ii)(E))**
 - f. Description of the procedures and methods that are used for quality assurance, maintenance, and repair of all continuous monitoring systems (CMS). **(40 CFR 63.1983(b)(5)(ii)(F))**

4. The monitoring requirements apply at all times the treatment system is operating except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities. The permittee must complete monitoring system repairs in response to monitoring system malfunctions and to return the monitoring system to operation as expeditiously as practicable. **(40 CFR 63.1961(h))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee must install and properly operate a treatment system in accordance with 40 CFR 63.1981(d)(2). **(40 CFR 63.1961(d))**
2. The permittee must install, calibrate, and maintain a gas flow rate measuring device that records the flow to the treatment system at least every 15 minutes; and secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. **(40 CFR 63.1961(g))**

V. TESTING/SAMPLING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records must be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee must keep monthly records of all treatment system operating parameters specified to be monitored according to 40 CFR 63.1961. The records must include:
 - a. Continuous records of the indication of flow and gas flow rate to the treatment system. **(40 CFR 63.1983(c)(2))**
 - b. The indication of bypass flow or records of monthly inspections of car-seals or lock-and-key configurations used to seal bypass lines. **(40 CFR 63.1983(c)(2))**
 - c. Maintenance and repair of the monitoring system. **(40 CFR 63.1961(h))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee must submit to the appropriate AQD District Office semiannual reports for the landfill gas treatment system. The reports must be received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. The reports must include the following:
 - a. The number of times the parameters for the treatment system under 40 CFR 63.1961(g) were exceeded. **(40 CFR 63.1981(h)(1)(iii))**
 - b. Description and duration of all periods when the gas stream is diverted from the treatment system through a bypass line or the indication of bypass flow. **(40 CFR 63.1981(h)(2))**
 - c. Description and duration of all periods when the treatment system was not operating and length of time the treatment system was not operating. **(40 CFR 63.1981(h)(3))**

5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test required, submit the results of the performance test with data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>). Submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). The data must be submitted in a file format generated through the use of the USEPA's ERT. Alternatively, submit an electronic file consistent with the extensible markup language (XML) schema listed on the USEPA's ERT website. **(40 CFR 63.1981(I)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website, the results of the performance test must be included as an attachment in the ERT or an alternate electronic file consistent with the XML schema listed on the USEPA's ERT website. Submit the ERT generated package or alternative file to the USEPA via CEDRI. **(40 CFR 63.1981(I)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI. CEDRI can be accessed through the USEPA's CDX. The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). Once the spreadsheet template upload/forms for the reports have been available in CEDRI for 90 days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. The semiannual reports should be electronically reported as a spreadsheet template upload/form to CEDRI. If the reporting forms specific to this subpart are not available in CEDRI at the time that the reports are due, the permittee must submit the reports to the USEPA at the appropriate address listed in 40 CFR 63.13. **(40 CFR 63.1981(I)(2))**
6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 63, Subpart AAAA to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee must comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills as specified in 40 CFR Part 63, Subparts A and AAAA. **(40 CFR Part 63, Subparts A and AAAA)**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO ₂ e	Carbon Dioxide Equivalent
CEMS	Continuous Emission Monitoring System	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
Department/ department	Michigan Department of Environment, Great Lakes, and Energy	gr	Grains
EGLE	Michigan Department of Environment, Great Lakes, and Energy	HAP	Hazardous Air Pollutant
EU	Emission Unit	Hg	Mercury
FG	Flexible Group	hr	Hour
GACS	Gallons of Applied Coating Solids	HP	Horsepower
GC	General Condition	H ₂ S	Hydrogen Sulfide
GHGs	Greenhouse Gases	kW	Kilowatt
HVLP	High Volume Low Pressure*	lb	Pound
ID	Identification	m	Meter
IRSL	Initial Risk Screening Level	mg	Milligram
ITSL	Initial Threshold Screening Level	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	NMOC	Non-methane Organic Compounds
MAP	Malfunction Abatement Plan	NO _x	Oxides of Nitrogen
MSDS	Material Safety Data Sheet	ng	Nanogram
NA	Not Applicable	PM	Particulate Matter
NAAQS	National Ambient Air Quality Standards	PM10	Particulate Matter equal to or less than 10 microns in diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	%	Percent
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SDS	Safety Data Sheet	TAC	Toxic Air Contaminant
SNCR	Selective Non-Catalytic Reduction	Temp	Temperature
SRN	State Registration Number	THC	Total Hydrocarbons
TEQ	Toxicity Equivalence Quotient	tpy	Tons per year
USEPA/EPA	United States Environmental Protection Agency	µg	Microgram
VE	Visible Emissions	µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee must continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 2 (Blue Water Renewables, LLC). Therefore, this appendix is not applicable.

Appendix 7. Emission Calculations

Specific emission calculations to be used with monitoring, testing or recordkeeping data are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible group Special Conditions. Therefore, this appendix is not applicable.

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee must use EGLE, AQD, Report Certification form (EQP 5736) and EGLE, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, emission unit and/or flexible group special conditions. Therefore, Part B of this appendix is not applicable.

C. Other Reporting - Calculations

The permittee shall demonstrate compliance with the emission limits in this permit by vendor data, stack testing, and/or gas testing.

Vendor Data or Stack Testing:

The permittee shall use emission factors from vendor data or from source specific testing (if stack test data is available, use most recent stack test data), as available for each emission unit included in FGFACILITY. The permittee shall use emission factors contained in the most recent AP-42 (Compilation of Air Pollutant Emission

Factors) or the most recent FIRE (Factor Information Retrieval) database if vendor or stack testing data is not available. If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions. The permittee shall document the source of each emission factor used in the calculations.

Calculation for Monthly SO₂ Emissions:

The following calculation for SO₂ emissions shall utilize the monthly average of the weekly (or daily, if required) H₂S concentration measurements from test data collected, the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test.

SO₂ Emissions (tons per month)

$$\begin{aligned} &= \frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} \times \frac{1.1733 \text{ mols Sulfur}}{\text{ft}^3} \times \frac{34.08 \text{ grams}}{\text{mol Sulfur}} \times \frac{\text{pound}}{453.59 \text{ grams}} \\ &\times \frac{1 \text{ ton}}{2,000 \text{ pounds}} \times \frac{1.88 \text{ SO}_2}{\text{H}_2\text{S}} \text{Molecular Weight Ratio} \times \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} \times \text{Monthly Landfill Gas Usage (ft}^3\text{/month)} \end{aligned}$$

This is the template for 40 CFR Part 62, Subpart OOO - 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 which have actual non-methane organic compounds (NMOC) emissions equal to or greater than 34 megagrams per year.

This template is meant to be inserted into the ROP shell document along with the associated parts and appendices that are specific to this template.

Included is the emission unit name, description, and some instructions for Part C, the Emission Unit Summary Table and Part D, Flexible Group Special Conditions. Other emission units may be needed for the ROP.

C. EMISSION UNIT SPECIAL CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

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
EULANDFILL NOTE: These requirements are included in the documents for Section 1 of the ROP for Smith's Creek Landfill	A Municipal Solid Waste (MSW) landfill that commenced construction, reconstruction, or modification on or before July 17, 2014 and has not been modified or reconstructed since July 17, 2014 and has accepted waste at any time since November 8, 1987. The MSW landfill has a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions equal to or greater than 34 Mg per year.	12/31/1989 / Modified May, 2014	FGLANDFILL-OOO
EUACTIVECOLL & EUPASSIVECOLL NOTE: These requirements are included in the documents for Section 1 of the ROP for Smith's Creek Landfill	This emission unit represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment.	10/31/2002	FGLANDFILL-OOO FGACTIVECOLL-OOO FGPASSIVECOLL-OOO
EUTREATMENTSYS	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. The treatment system removes particulate to at least the 10-micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion of gas for subsequent use.	06/01/2011	FGLANDFILL-OOO FGTREATMENTSYS-OOO
EUOPENFLARE NOTE: These requirements are included in the documents for Section 1 of the ROP for Smith's Creek Landfill	Open flare is an open combustor without enclosure or shroud.	10/31/2002	FGLANDFILL-OOO FGOPENFLARE-OOO

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EUVENTFLARE NOTE: These requirements are included in the documents for Section 1 of the ROP for Smith's Creek Landfill	Consists of seven self-igniting (solar powered) flares which combust gas vented from the passive landfill gas collection portion of the landfill. The flares are not enclosed or shrouded. The initial performance testing of six of the solar flares was performed on March 18, 2003; the 7 th flare will be tested within 180 days of startup.	10/31/2002 (six flares) & 9/21/2022 (7 th flare)	FGLANDFILL-OOO FGVENTFLARE-OOO

D. FLEXIBLE GROUP SPECIAL CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

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
FGLANDFILL-000	This flexible group represents the general MSW landfill with a required collection and control system. This flexible group contains 40 CFR Part 62, Subpart 000 requirements.	This flexible group is included in Section 1 of the ROP for Smith's Creek Landfill
FGACTIVECOLL-000 & FGPASSIVECOLL-000	This flexible group represents the active landfill gas collection system that uses gas mover equipment to draw landfill gas from the wells and moves the gas to the control equipment. This flexible group contains 40 CFR Part 62, Subpart 000 requirements.	This flexible group is included in Section 1 of the ROP for Smith's Creek Landfill
FGTREATMENTSYS-000	A treatment system that filters, de-waters, and compresses landfill gas for subsequent sale or beneficial use. This flexible group contains 40 CFR Part 62, Subpart 000 requirements.	EUTREATMENTSYS
FGOPENFLARE-000	Open (non-enclosed) flare is an open combustor without enclosure or shroud. This flexible group contains 40 CFR Part 62, Subpart 000 requirements.	This flexible group is included in Section 1 of the ROP for Smith's Creek Landfill
FGENCLOSEDFLARE-000	An enclosed flare (enclosed combustor) is an enclosed firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. This flexible group contains 40 CFR Part 62, Subpart 000 requirements.	This flexible group is included in Section 1 of the ROP for Smith's Creek Landfill

FGTREATMENTSYS-000 FLEXIBLE GROUP CONDITIONS

DESCRIPTION

This emission unit treats landfill gas before it is used for electrical generation. The treatment system removes particulate to at least the 10 micron level, compresses the landfill gas, and removes enough moisture to ensure good combustion during subsequent use. The treatment of the LFG ensures that a high percentage of NMOC will be destroyed in the internal combustion engines (spark ignition, lean burn, reciprocating internal combustion engine Caterpillar G3520C, 2,233 bhp at 100% load engines and associated generator producing 1.6 megawatt gross electrical output). This flexible group contains 40 CFR Part 62, Subpart OOO requirements.

Emission Unit: EUTREATMENTSYS

POLLUTION CONTROL EQUIPMENT

Any emissions from any atmospheric vents or stacks associated with the treatment system subject to 40 CFR 62.16714(c)(1) or (2).

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must operate the treatment system so that any emissions from any atmospheric vents or stacks associated with the treatment system must comply with 40 CFR 62.16714(c)(1) or (2). **(40 CFR 62.16714(c)(3) and (4))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Each permittee that chooses to comply with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, must keep records of the date upon which the permittee started complying with the provisions in 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961 and must keep records according to 40 CFR 63.1983(e)(1) through (5). **(40 CFR 62.16726(e))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. If complying with the operational provisions of 40 CFR 63.1958, 40 CFR 63.1960, and 40 CFR 63.1961, as allowed in 40 CFR 62.16716, 40 CFR 62.16720, and 40 CFR 62.16722, the permittee must follow the semi-annual reporting requirements in 40 CFR 63.1981(h) in lieu of 40 CFR 62.16724(h). **(40 CFR 62.16724(h))**
5. The permittee must submit reports electronically according to the following:
 - a. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the permittee must submit the results of each performance test. For data collected using test methods supported by the USEPA's Electronic Reporting Tool (ERT) as listed on the USEPA's ERT website (<https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert>), submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). The CEDRI can be accessed through the USEPA's CDX (<https://cdx.epa.gov/>). Performance test data must be submitted in a file format generated through the use of the USEPA's ERT or an alternative file format consistent with the extensible markup language (XML) schema listed on the EPA's ERT website, once the XML schema is available. **(40 CFR 62.16724(j)(1)(i))**
 - b. For data collected using test methods that are not supported by the USEPA's ERT as listed on the USEPA's ERT website at the time of the test, submit the results of the performance test to the USEPA at the appropriate address listed in 40 CFR 60.4. **(40 CFR 62.16724(j)(1)(ii))**
 - c. Each permittee must submit reports to the USEPA via CEDRI (CEDRI can be accessed through the USEPA's CDX). The permittee must use the appropriate electronic report in CEDRI for this subpart or an alternate electronic file format consistent with the XML schema listed on the CEDRI website (<https://www.epa.gov/chief>). If the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, the permittee must submit the report to the USEPA at the appropriate address listed in 40 CFR 60.4. Once the form has been available in CEDRI for 90 calendar days, the permittee must begin submitting all subsequent reports via CEDRI. The reports must be submitted by the deadlines specified in this subpart, regardless of the method in which the reports are submitted. **(40 CFR 62.16724(j)(2))**
6. The permittee shall submit any performance test reports and all other reports required by 40 CFR Part 62, Subpart OOO to the appropriate AQD District Office, in a format approved by the appropriate AQD District Supervisor. **(R 336.1213(3)(c), R 336.2001(5))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee must comply with all applicable provisions of 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. Each permittee must comply with the provisions for the operational standards in 40 CFR 62.16716 (as well as the provisions in 40 CFR 62.16720 and 40 CFR 62.16722), or the operational standards in 40 CFR 63.1958 (as well as the provisions in 40 CFR 63.1960 and 40 CFR 63.1961), or both as alternative means of compliance, for an MSW landfill with a gas collection and control system used to comply with the provisions of 40 CFR 62.16714(b) and (c). Once the

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permittee begins to comply with the provisions of 40 CFR 63.1958, 40 CFR 63.1960 and 40 CFR 63.1961, the permittee must continue to operate the collection and control device according to those provisions and cannot return to the provisions of 40 CFR 62.16716, 40 CFR 62.16720 and 40 CFR 62.16722. **(40 CFR 62.16716, 40 CFR 62.16720, 40 CFR 62.16722, 40 CFR Part 62, Subpart OOO)**

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO ₂ e	Carbon Dioxide Equivalent
CEMS	Continuous Emission Monitoring System	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
Department/ department	Michigan Department of Environment, Great Lakes, and Energy	gr	Grains
EGLE	Michigan Department of Environment, Great Lakes, and Energy	HAP	Hazardous Air Pollutant
EU	Emission Unit	Hg	Mercury
FG	Flexible Group	hr	Hour
GACS	Gallons of Applied Coating Solids	HP	Horsepower
GC	General Condition	H ₂ S	Hydrogen Sulfide
GHGs	Greenhouse Gases	kW	Kilowatt
HVLP	High Volume Low Pressure*	lb	Pound
ID	Identification	m	Meter
IRSL	Initial Risk Screening Level	mg	Milligram
ITSL	Initial Threshold Screening Level	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	NMOC	Non-methane Organic Compounds
MAP	Malfunction Abatement Plan	NO _x	Oxides of Nitrogen
MSDS	Material Safety Data Sheet	ng	Nanogram
NA	Not Applicable	PM	Particulate Matter
NAAQS	National Ambient Air Quality Standards	PM10	Particulate Matter equal to or less than 10 microns in diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	%	Percent
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SDS	Safety Data Sheet	TAC	Toxic Air Contaminant
SNCR	Selective Non-Catalytic Reduction	Temp	Temperature
SRN	State Registration Number	THC	Total Hydrocarbons
TEQ	Toxicity Equivalence Quotient	tpy	Tons per year
USEPA/EPA	United States Environmental Protection Agency	µg	Microgram
VE	Visible Emissions	µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

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

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. **(R 336.1213(4)(a), R 336.1119(a)(ii))**

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

At the time of permit issuance, no Permit-to-Install has been issued to this facility's Section 2 (Blue Water Renewables, LLC). Therefore, this appendix is not applicable.

Appendix 7. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FGACTIONECOLL-000 and FGOPENFLARE-000.

Calculation used to determine NMOC emissions from any nonproductive area

The following shall be used to determine if any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than one percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material must be documented and provided to the Administrator upon request. A separate NMOC emissions estimate must be made for each section proposed for exclusion, and the sum of all such sections must be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section must be computed using the following equation: **(40 CFR 62.16728(a)(3)(ii)(A))**

$$Q_i = 2 k L_o M_i (e^{-k t_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

Where:

Q_i = NMOC emission rate from the i th section, Mg per year

k = methane generation rate constant, year⁻¹

L_o = methane generation potential, cubic meters per Mg solid waste

M_i = mass of the degradable solid waste in the i th section, Mg

t_i = age of the solid waste in the i th section, years

C_{NMOC} = concentration of non-methane organic compounds, ppm by volume

3.6×10^{-9} = conversion factor

The values for k and C_{NMOC} determined in field testing must be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_0 and C_{NMOC} provided in 40 CFR 62.16718 or the alternative values from 40 CFR 62.16718 must be used. The mass of non-degradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the non-degradable material is documented as provided in 40 CFR 62.16728(a)(3)(iii).

Net Heating Value of the gas being combusted in the flare:

The net heating value of the gas being combusted in the flare shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(3). **(40 CFR 60.18(f)(3))**

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C;

$$K = \text{Constant, } 1.740 \times 10^{-7} \left(\frac{1}{\text{ppm}} \right) \left(\frac{\text{g mole}}{\text{scm}} \right) \left(\frac{\text{MJ}}{\text{kcal}} \right)$$

where the standard temperature for $\left(\frac{\text{g mole}}{\text{scm}} \right)$ is 20°C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946–77 or 90 (Reapproved 1994) (Incorporated by reference as specified in 40 CFR 60.17); and

H_i = Net heat of combustion of sample component i , kcal/g mole at 25°C and 760 mmHg. The heats of combustion may be determined using ASTM D2382–76 or 88 or D4809–95 (incorporated by reference as specified in 40 CFR 60.17) if published values are not available or cannot be calculated.

Calculation for Vmax steam-assisted and non-assisted flares

The maximum permitted velocity, V_{max} , for flares complying with 40 CFR 60.18(c)(4)(iii) shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(5). **(40 CFR 60.18(f)(5))**

$$\text{Log}_{10} (V_{max}) = (H_T + 28.8) / 31.7$$

Where:

V_{max} = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

H_T = The net heating value as determined in 60.18(f)(3).

Calculation for Vmax for air-assisted flares

The maximum permitted velocity, V_{max} , for air-assisted flares shall be calculated and recorded using the equation provided in 40 CFR 60.18(f)(6). **(40 CFR 60.18(f)(6))**

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$$V_{\max} = 8.706 + 0.7084 (H_T)$$

Where:

V_{\max} = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

H_T = The net heating value as determined in 60.18(f)(3).

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use EGLE, AQD, Report Certification form (EQP 5736) and EGLE, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, emission unit and/or flexible group special conditions. Therefore, Part B of this appendix is not applicable.

**FG-ICENGINES
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE), located at a major source of HAP emissions, existing spark ignition (SI) RICE greater than 500 bhp and combusts landfill gas equivalent to 10% or more of the gross heat input on an annual basis. A RICE is existing if the date of installation is before December 19, 2002

FG-ICENGINES: Two (2) reciprocating internal combustion engines (RICE) that will only combust treated landfill gas for fuel. Each engine has an associated generator set for producing electricity (PTI No. 163-09D).

Emission Unit: EU-ICENGINE1 and EU-ICENGINE2

POLLUTION CONTROL EQUIPMENT

Air-to-fuel ratio controller on each engine.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. CO	16.3 ² pph (applies to each engine)	Hourly	EU-ICENGINE1 and EU-ICENGINE2	SC V.1	R 336.1205 40 CFR 52.21(d)
2. CO	5.0 ² g/bhp-hr or 610 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1 and EU-ICENGINE2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
3. NO _x	3.0 ² pph (applies to each engine)	Hourly	EU-ICENGINE1 and EU-ICENGINE2	SC V.1	40 CFR 52.21(c) and (d)
4. NO _x	2.0 ² g/bhp-hr or 150 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1 and EU-ICENGINE2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
5. Hydrogen Chloride (HCl)	0.51 ² pph (applies to each engine)	Hourly	EU-ICENGINE1 and EU-ICENGINE2	SC V.1	R 336.1225

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
6. VOC	1.0 ² g/bhp-hr or 80 ² ppmvd corrected to 15% O ₂ (applies to each engine)	Hourly	EU-ICENGINE1 and EU-ICENGINE2	SC V.2	40 CFR Part 60 Subpart JJJJ 40 CFR 60.4233(e) and Table 1
7. Formaldehyde	2.12 ² pph ¹ (applies to each engine)	Hourly	EU-ICENGINE1 and EU-ICENGINE2	SC V.3	R 336.1225(2)
8. SO ₂	6.21 ² pph (applies to each engine)	Hourly	EU-ICENGINE1 and EU-ICENGINE2	SC V.1	40 CFR 52.21(c) and (d)
9. SO ₂	54.4 ² tpy ^A	12-month rolling time period, as determined at the end of each calendar month	FG-ICENGINES	SC V.4 SC VI.2 and Appendix A	R 336.1205(3)

^A This limit is based on the calculation in Appendix 7-2

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall *only* burn landfill gas in FG-ICENGINES that has been treated in a system which complies with 40 CFR 60.752(b)(2)(iii)(C).² **(R 336.1225, 40 CFR 60.752(b)(2)(iii)(c))**
2. No later than 60 days after issuance of this permit, the permittee shall submit to the AQD District Supervisor, for review and approval, an updated malfunction abatement/preventative maintenance plan for FG-ICENGINES. After approval of the malfunction abatement/preventative maintenance plan by the AQD District Supervisor, the permittee shall not operate FG-ICENGINES unless the malfunction abatement/ preventative maintenance plan, 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:²
 - 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 the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the malfunction abatement/preventative maintenance plan to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d))**

3. The permittee shall operate and maintain each engine in FG-ICENGINES such that it meets the emission limits established, over the entire life of the engine.² **(40 CFR 60.4234, 40 CFR 60.4243(b))**
4. If the permittee purchased a non-certified engine or a certified engine operating in a non-certified manner, the permittee shall keep a maintenance plan for each engine in FG-ICENGINES and shall, to the extent practicable, maintain and operate each engine in a manner consistent with good air pollution control practice for minimizing emissions.² **(40 CFR 60.4243(b))**
5. Each engine in FG-ICENGINES shall operate in a manner which reasonably minimizes HAP emissions.² **(40 CFR 63.6625(c))**
6. Each engine in FG-ICENGINES shall operate in a manner which minimizes time spent at idle during startup and minimize the startup time to a period needed for appropriate and safe loading of each engine, not to exceed 30 minutes.² **(40 CFR 63.6625(h))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate any engine in FG-ICENGINES unless that engine's air/fuel ratio controller is installed, maintained and operated in a satisfactory manner.² **(R 336.1702, R 336.1910)**
2. The permittee shall equip and maintain FG-ICENGINES with non-resettable hours meters to track the operating hours.² **(40 CFR 60.4243)**
3. The permittee shall equip FG-ICENGINES with a device to monitor and record the total landfill gas fuel usage for FG-ICENGINES on a continuous basis.² **(R 336.1205, R 336.1225, 40 CFR 63.6625(c))**
4. The design capacity of each engine in FG-ICENGINES shall not exceed 2,233 bhp, as specified by the equipment manufacturer.² **(R 336.1205, R 336.1225, R 336.1702)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Within every five years from the date of completion of the most recent stack test, the permittee shall verify NO_x, HCl, CO, SO₂ emission rates from each engine in FG-ICENGINES, by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in the table below:²

Pollutant	Test Method Reference
NO _x	40 CFR Part 60, Appendix A
SO ₂	40 CFR Part 60, Appendix A
CO	40 CFR Part 60, Appendix A
Hydrogen Chloride	40 CFR Part 60, Appendix A

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 30 days prior to testing, 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 testing, including any modifications to the method in the test protocol that are proposed after initial submittal. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, R 336.1225, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) and (d))**

2. Except as provided in 40 CFR 60.4243(b), the permittee shall conduct an initial performance test for each engine in FG-ICENGINES within one year after startup of the engine and every 8,760 hours of operation (as determined through the use of a non-resettable hour meter) or three years, whichever occurs first, to demonstrate compliance with the emission limits in 40 CFR 60.4233(e), and as established in this permit, unless the engines have been certified by the manufacturer as required by 40 CFR Part 60 Subpart JJJJ and the permittee maintains the engine as required by 40 CFR 60.4243(a)(1). If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4244. No less than 30 days prior to any testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The

permittee shall not test without prior approval of the test plan by AQD. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.² **(40 CFR 60.4243, 40 CFR 60.4244, 40 CFR Part 60 Subpart JJJJ)**

3. Within every five years from the date of completion of the most recent stack test, the permittee shall verify formaldehyde emission rates from each engine in FG-ICENGINES at maximum routine operating conditions, by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.² **(R 336.1225(2), R 336.2001, R 336.2003, R 336.2004)**
4. The permittee shall verify the hydrogen sulfide (H₂S) or total reduced sulfur (TRS) content of the landfill gas burned in FG-ICENGINES 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. If at any time, the H₂S (TRS equivalent) concentration of the landfill gas sample exceeds 1,300 ppmv, the permittee shall sample and record the H₂S (TRS equivalent) concentration of the landfill gas daily and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken. Once the H₂S (TRS equivalent) concentration of the landfill gas determined from the daily samples are maintained below 1,300 ppmv, for one week after an exceedance, the permittee may resume weekly monitoring and recordkeeping. No less than 30 days prior to the initial test for each type of gas sampling, 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 shall keep all records on file at the facility and make them available to the Department upon request.² **(R 336.1205(3), R 336.1225, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21 (c) and (d))**

See Appendix 5-2

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall continuously monitor, in a satisfactory manner, the total landfill gas fuel usage and the hours of operation for FG-ICENGINES.² **(40 CFR 52.21(c) and (d), 40 CFR Part 60 Subpart JJJJ)**
2. The permittee shall calculate and record the SO₂ emission rates from FG-ICENGINES using the equation in Appendix 8-2, C. The calculations shall utilize, at a minimum, weekly gas sampling data collected (Special Condition V.4), the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H₂S from the most recent laboratory test. All records shall be kept on file at the facility and make them available to the Department upon request.² **(R 336.1205(3)), 40 CFR 52.21 (c) and (d))**
3. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.² **(R 336.1205, R 336.1225, R 336.1702, 40 CFR 52.21(c) and (d))**
4. The permittee shall maintain the following record for each engine in FG-ICENGINES. The following information shall be recorded and kept on file at the facility:²
 - a. Engine manufacturer;
 - b. Date engine was manufactured;
 - c. Engine model number and model year;
 - d. Maximum engine power;
 - e. Engine serial number;
 - f. Engine specification sheet;
 - g. Date of initial startup of the engine; and
 - h. Date engine was removed from service at this stationary source.

All of the above information shall be stored in a format acceptable to the AQD District Supervisor. **(R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702, R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d))**

5. The permittee shall maintain records of all information necessary for all notifications and reports for each engine in FG-ICENGINES, as specified in these special conditions as well as that information necessary to demonstrate compliance with the emission limits of this permit. This information shall include, but shall not be limited to the following:²
 - a. Compliance tests and any testing required under the special conditions of this permit;
 - b. Monitoring data for the hours of operation, volumetric flow rate and landfill gas usage of each engine;
 - c. Calculated amount of landfill gas combusted in each engine on a monthly and 12-month rolling basis;
 - d. Hours of operation on a monthly and 12-month rolling basis;
 - e. Monthly average Btu content of the landfill gas burned;
 - f. Manufacturer's data, specifications, and operating and maintenance procedures;
 - g. Maintenance activities conducted according to the PM/MAP;
 - h. All calculations necessary to show compliance with the limits contained in this permit.

All of the above information shall be stored in a format acceptable to the AQD District Supervisor. **(R 336.1205, R 336.1225, R 336.1301, R 336.1331, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) and (d), 40 CFR Part 60 Subpart JJJJ, 40 CFR 63.6625(c))**

See Appendix 7-2

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee shall submit an initial notification as required by 40 CFR 60.7(a)(1) for each engine in FG-ICENGINES if the engine(s) installed is/are not certified by an engine manufacturer to meet the emission standards in 40 CFR 60.4231. The notification shall include the information below, as specified in 40 CFR 60.4245 (c)(1) through (5).²
 - a. Name and address of the owner or operator. **(40 CFR 60.4245(c)(1))**
 - b. The address of the affected source. **(40 CFR 60.4245(c)(2))**
 - c. Engine information including engine manufacturer, model, model year, date of manufacture, maximum engine power, engine displacement, engine family, serial number. **(40 CFR 60.4245(c)(3))**
 - d. Emission control equipment. **(40 CFR 60.4245(c)(4))**
 - e. Fuel used. **(40 CFR 60.4245(c)(5))**

The permittee shall submit the initial notification to the AQD District Supervisor in an acceptable format within 30 days of commencing construction of any engine in FGICENGINES. **(40 CFR Part 60, Subpart JJJJ)**

5. The permittee shall submit an annual report in accordance with Table 7 of 40 CFR Part 63, Subpart ZZZZ to the appropriate AQD district office by no later than January 31. The following information shall be included in this annual report:² **(40 CFR 63.6650(g), 40 CFR 63.6650(b)(5))**
 - a. The fuel flow rate and the heating values that were used in the permittee's calculations. Also, the permittee must demonstrate that the percentage of heat input provided by landfill gas or digester gas is equivalent to 10 percent or more of the total fuel consumption on an annual basis. **(40 CFR 63.6650(g)(1))**
 - b. The operating limits provided in the permittee's federally enforceable permit, and any deviations from these limits. **(40 CFR 63.6650(g)(2))**

- c. Any problems or errors suspected from the fuel flow rate meters. **(40 CFR 63.6650(g)(3))**

See Appendix 8-2

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVICENGINE1	16 ²	38 ²	R 336.1225 40 CFR 52.21 (c) and (d)
2. SVICENGINE2	16 ²	38 ²	R 336.1225 40 CFR 52.21 (c) and (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the New Source Performance Standards as specified in 40 CFR Part 60, Subpart A and Subpart JJJJ, as they apply to FGICENGINES.² **(40 CFR Part 60 Subpart A and JJJJ)**
2. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR, Part 63, Subpart A and Subpart ZZZZ, as they apply to FGICENGINES.² **(40 CFR Part 63, Subparts A and ZZZZ)**

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

² This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**SITE-SPECIFIC TREATMENT
SYSTEM MONITORING PLAN (TSMP)**

BLUE WATER RENEWABLES, LLC

6779 Smiths Creek Road
Smiths Creek, Michigan 48193

Issued September 2021

DTE Energy Resources, LLC

**SITE-SPECIFIC TREATMENT SYSTEM MONITORING PLAN
LANDFILL GAS TREATMENT SYSTEM
BLUE WATER RENEWABLES, LLC
SMITHS CREEK, MI**

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**SITE-SPECIFIC TREATMENT SYSTEM MONITORING PLAN
LANDFILL GAS TREATMENT SYSTEM
BLUE WATER RENEWABLES, LLC
SMITHS CREEK, MI**

APPENDICES

APPENDIX A: TSMP Recordkeeping Forms, including Completed Forms

APPENDIX B: Summary of TSMP Revisions

SITE-SPECIFIC TREATMENT SYSTEM MONITORING PLAN
LANDFILL GAS TREATMENT SYSTEM
BLUE WATER RENEWABLES, LLC
SMITHS CREEK, MI

1.0 INTRODUCTION

1.1 Background

This site-specific treatment system monitoring (TSMP) was prepared to satisfy the requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for municipal solid waste (MSW) landfills (40 CFR Part 63, subparts A and AAAA), more specifically Title 40 Code of Federal Regulations Part 63.1983(b)(5)(ii). The purpose of the NESHAP is to prevent excess emissions of hazardous air pollutants (HAPs) during operation of the landfill gas collection system (LFGCS) and associated monitoring equipment. This Plan was specifically prepared for Blue Water Renewables, LLC (BLU) located at 6779 Smiths Creek Road, Smiths Creek, Michigan. The facility accepts landfill gas (LFG) from the Smiths Creek Landfill located at the same address.

This TSMP identifies site-specific filtration, de-watering and compression equipment at the BLU facility. This equipment is detailed herein. The TSMP further identifies appropriate monitoring parameters and acceptable operating ranges for these parameters. Finally, the TSMP identifies monitoring frequencies, corrective actions and recordkeeping/reporting requirements to satisfy the NESHAP requirements.

1.2 Site-Specific Components

The BLU facility performs the gas treatment of the landfill gas (LFG) in the process flow order of compression, de-watering, and then filtration. These site-specific processes include compression, de-watering and filtration.

1.3 Excluded Components

The following items are not included in the requirements of the NESHAP or this TSMP:

- Applicability of TSMP requirements for the Smiths Creek Landfill backup flare and associated blower skid is solely the responsibility of Smiths Creek Landfill and is not covered in this TSMP.
- Any equipment downstream of the final compression, de-watering and filtration system is not subject to the requirements of the NESHAP as only gas collection and control systems (GCCS) and associated treatment systems (i.e. compression, de-watering and filtration components).

2.0 COMPRESSION SYSTEM

The compression system at BLU occurs first in the flow of the LFG through the treatment system. The TSMP provides monitoring procedures and recordkeeping to ensure the proper operation of this system.

2.1 Site-Specific Compression Identification

LFG enters gas blower skid from a common header with compression provided via a multi-stage blower. This compression allows for proper combustion in the beneficial use devices following the treatment system.

2.2 Compression Monitoring Parameters and Acceptable Ranges

LFG compression at BLU is monitored continuously via PLC data in the control room. Compression levels below 2 psig to the combustion engines is unacceptable.

Proper compression is a necessity for proper operation of the combustion engines. Compression of gas less than 2 psig at the engine will cause an automatic shutdown of the engine. Landfill gas after engines shutdown is routed to the landfill owned destruction devices.

3.0 DE-WATERING SYSTEM

The de-watering system for the BLU facility follows the compression system in the LFG flow. The TSMP provides monitoring procedures and recordkeeping to ensure the proper operation of this system

3.1 Site-Specific De-Watering Identification

Initial de-watering of the raw LFG from the Smiths Creek Landfill occurs prior to the BLU compression system. LFG is routed through an inlet knockout tank which removes some condensate before entering the gas blower skid. Further moisture is removed by an aftercooler knockout tank. The condensate removed by these knockouts feed to a knockout pump. This pumps the condensate back to the Smiths Creek Landfill leachate/condensate treatment systems. The condensate flow is monitored by an hour meter.

3.2 De-Watering Monitoring Parameters and Acceptable Ranges

De-watering is best monitored by the knockout pump hour meter. The meter is checked and recorded weekly to ensure proper de-watering. Flow less than 10 gallons per week on average would indicate an issue with the system. Normal flow rates are much higher than this depending on the season and recent precipitation.

4.0 FILTRATION SYSTEM

Filtration of the LFG at the BLU facility is the final step in the gas treatment system. Again, the filtered gas ensures proper combustion for beneficial reuse of the LFG and protects downstream systems.

4.1 Site-Specific Filtration Identification

After de-watering the LFG is routed through the final coalescing filter. The coalescing filter feeds condensate to a mid-mainline knockout sump. The proper operation of the filter is confirmed by differential pressure less than 2 psid. After this point the LFG has completed the gas treatment process as defined by the NSPS and is acceptable for beneficial reuse.

4.2 Filtration Monitoring Parameters and Acceptable Ranges

Filtration is best monitored by the coalescer differential pressure. The differential pressure is checked and recorded weekly to ensure proper filtration. Differential pressure greater than 2 psid would indicate an issue with the system.

5.0 MONITORING ROLES, FREQUENCIES AND RECORDKEEPING

The TSMP should be kept as a record and made available to the US EPA or MI EGLE as requested. An example recordkeeping form containing the required recordkeeping information is included in Appendix A. Specific monitoring, monitoring frequency, roles and methods of monitoring/recordkeeping is outlined in the table below.

TSMP Component	Parameter Monitored	Minimum Monitoring Frequency	Acceptable Range	Range Justification	Recordkeeping Method	Responsible Role
Compression	Compressor Outlet Pressure	Weekly	>2 psig	Turbine Minimum Pressure To Avoid Flame Out	Technician Rounds	Facility Technician
De-Watering	Moisture Collection	Weekly	>10 Gallons Per Week	Initial Knockout and Aftercooler Knockout tanks Dewatering	Technician Rounds	Facility Technician
Filtration	Moisture Collection	Weekly	<2 psid	Filtration and moisture removing	Technician Rounds	Facility Technician

6.0 MODIFICATIONS

The TSMP must be periodically modified to reflect changes in the equipment, operations, or procedures. Revisions or modifications to the Plan do not constitute Title V air permit revisions. Previous versions of the TSMP should be available for inspection by the US EPA or the MI EGLE for five (5) years after the revisions are made. In order to track revisions or modifications to the plan, a summary table of revisions is included in Appendix B.

APPENDIX A

BLUE WATER RENEWABLES, LLC

TSMP Example Recordkeeping Form

Engine/Generator Performance Readings	Normal Value	#1 Engine	#2 Engine
Main Breaker KW to Edison	1280 - 3200		
Main Breaker Amps			
Main Breaker Volts	40590 - 45100		
Engine KW Set @	1250 - 1630		
Generator Amps			
Generator Volts	3827 - 4493		
Engine Hours			
Correction Factor (100 Preferred)	96 - 104		
Fuel Quality (Heating Value)	48-60		
Engine Fuel Temp. (deg F)	50 - 140		
Inlet AC Air Temp (deg F)	165 Max		
Manfd Air Press (PSI)			
Air Fuel Ratio	7.5 - 8.5		
Manfd Air Flow (SCFM)			
Fuel Flow (SCFM)			
Engine Oil Pressure (PSI)	55 - 85		
Engine Oil Diff. Pressure (PSI)	18 max		
Engine Oil Temp.(deg.F)	218 max		
Throttle Pos (%)	45 - 65		
Coolant Temp.(deg.F)	235 Max		
Turbo Temp. Out (L)	1140 Max		
Turbo Temp. In (L)	1100 - 1310		
Turbo Temp. Delta (L)	200 - 350		
Turbo Temp. Out (R)	1140 Max		
Turbo Temp. In (R)	1100 - 1310		
Turbo Temp. Delta (R)	200 - 350		
Battery Charger, Volts	25 - 28		
Battery Charger, Amps			
Crank Case Press. or Vacuum	-0.05 to -0.5		
Engine Oil Level	Mid Site Glass		
Day Tank Makeup Oil Level	1/4 - 3/4		
Oil Counter			
New Oil Tank Level			
AC Surge Tank Level	1/4 - 3/4		
Eng Radiator Surge Tank Level	1/4 - 3/4		
Coalescer Differential Pressure	2 psid max		

Blower 301 Skid		Blower Skid
Fuel Delivery Press.	2 PSig	
% Methane (Ch4)	44 - 60	
% Balance		
% Oxygen (O2)		
% H2O		
Fuel Skid Inlet Vaccum (in. wc)	54" Max	
Fuel Skid Inlet Temp. (deg F)	130 Max	
KOP Cond Level (in.)	8" Max	
BLR 301 Vibration (IN/SEC)	0.25	
Cooler In Temp.	170 Max	
Cooler Out Temp	50 to 130	
Fuel To Engines Flow (SCFM)		
Flare 1 Flow (SCFM)		
Flare 2 Flow (SCFM)		
Flare Temp.		
Ambient Temp.		

Additional Comments

APPENDIX B

BLUE WATER RENEWABLES, LLC

Summary of TSMP Revisions

APPENDIX B

Summary of TSMP Revisions

Name of Person Revising Plan	Date of Revision	Page Number(s) Revised	Reason for Revision
Rob Sanch	07/29/2021	Ubiquitous	TSMP creation.

**PREVENTIVE MAINTENANCE PLAN
BLUE WATER RENEWABLES, LLC
SMITH’S CREEK, MI**

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PREVENTIVE MAINTENANCE PLAN BLUE WATER RENEWABLES, LLC

APPENDICES

- APPENDIX A: Routine Scheduled Maintenance**
- APPENDIX B: Troubleshooting Guide**
- APPENDIX C: Recommended Spare Parts**
- APPENDIX D: CAT Maintenance Schedule**

PREVENTIVE MAINTENANCE PLAN

BLUE WATER RENEWABLES, LLC

1.0 INTRODUCTION

1.1 Background

Blue Water Renewables, LLC (BWR) operates a landfill as treatment system and two spark ignited internal combustion engines, under authority received from Michigan Department of Environmental Quality – Air Quality Division, through Renewable Operating Permit MI-ROP-N6207-2018.

Section 2, IX.3 of the Renewable Operating Permit requires that the Preventive Maintenance Program for the operation of the landfill gas treatment system and engines be developed and implemented. The plan shall include a schedule of maintenance activities consistent with the equipment manufacturers' recommendations, and the operating variables that will be monitored to detect a malfunction or failure.

The landfill gas treatment system filters, dewateres and compresses the landfill gas prior to delivery to the engines.

1.2 Included Components

The following items are included in the requirements of the Preventive Maintenance Plan (PMP):

- The gas treatment system that receives landfill gas from the landfill gas collection system, and conditions it prior to use as fuel in the internal combustion engines; including, but not limited to, gas dewatering system, gas filtration system and gas compression system.
- The landfill gas control system including, but not limited to the open flare, blower and motor, compressors, solar flares, ignition and operation equipment, continuous recording devices.
- Any future gas treatment system components.
- Engine and supporting components.

1.3 Owner Contacts

Facility Contact: Blue Water Renewables, LLC

Smiths Creek Landfill
6779 Smiths Creek Road
Smiths Creek, MI 48074

Jeff Neumann, Facility Manager

Cell Phone: 734-216-6979

Owner Contact: DTE Biomass Energy

One Energy Plaza, 400 WCB
Detroit, MI 48226

Doug Ayers, Director – Operations

Cell Phone: 734-678-3572

Corporate Environmental Contact: DTE Vantage

One Energy Plaza, 400 WCB
Detroit, MI 48226

Maureen Bennett, Environmental Engineer

Cell Phone: 734-834-0005

2.0 SCHEDULED MAINTENANCE

The Blue Water Renewables, LLC (BWR) facility consists of a landfill gas treatment system that feeds two Caterpillar engines. The engines are utilized to turn generators to produce renewable electricity for sale to the grid.

2.1 Landfill Gas Treatment System

The landfill gas treatment system for the BWR facility, or engine plant gas skid, is a system that is standard in the industry. The system is manufactured by Perennial Energy, Inc. (PEI) and utilizes traditional technologies to provide treatment of the landfill gas. Accordingly, the system is low maintenance compared to systems that provide for things such as siloxanes removal and/or removal of sulfur containing gases. Additionally, the lifespan of the treatment system is long, due to the relative simplicity of the technology. Unless the composition of the landfill gas changes significantly, which is not expected, this equipment is expected to last for at least 15 years with nothing more than routine maintenance provided. However, it is expected that the compressor, or blower, will require more extensive maintenance than the other components of the system.

The PEI manual for the equipment provides a schedule of routine maintenance for the system. The schedule specifies tasks that should be conducted on a routine basis. BWR will perform routine maintenance in accordance with the PEI manual. The elements of the routine maintenance program are as follows:

Frequency	Task
Daily	Visually Inspect Unit – note problems in site log book
Daily	Test Lamps (push RUN Lamp & ALARM/SHUTDOWN Lamp)
Every Two Months	Lubricate Blower
Every Three Months	Check Blower
Every Three Months	Adjust ZERO, DELTA PRESSURE, VACUUM gauges
Every Three Months	Remove debris from Demister
Every Three Months	Clean Demister, if necessary
Annually	Check for loose bolts at all flanges

Specific procedures for each of the tasks are contained in the PEI manual. The schedule from the manual is presented in Appendix A.

2.2 Engine Generator Sets

The engines utilized at the BWR facility are Caterpillar 3520C spark ignition engines. These are used widely throughout the landfill gas to energy industry.

BWR maintains the engines at the site in accordance with manufacturer recommendations, and with the operating experience at several other DTE Biomass Energy facilities (DTEBE), where an identical model of engine is used. Extensions to maintenance beyond manufacturer's recommendations will be made if found to be operationally feasible while taking into account environmental requirements.

Caterpillar has published a recommended preventive maintenance schedule for the Model 3520 engine. This schedule is attached as Appendix D in this document.

3.0 TROUBLESHOOTING

3.1 Landfill Gas Treatment System

The PEI manual provides a comprehensive table of troubleshooting actions in the event on system operating problems, or control system alarms. The table is included as Appendix B of this document

A list of manufacturers recommended spare parts is contained in Appendix C.

3.2 Engine Generator Sets

The CAT 3520 engine incorporates an Electronic Control Module (ECM) that continuously monitors several key operating parameters and adjusts operations at necessary to provide for most efficient combustion. The ECM is easily monitored by BWR staff when a malfunction does occur. The ECM programming includes the ability to set 'trip points' for key the key operating parameters. When the engine is not able to sufficiently adjust due to changing conditions and the trip point limit for one or more parameters is exceeded, the ECM automatically shuts down the engine. When a malfunction occurs, the ECM is accessed by BWR staff to identify the problem.

4.0 MODIFICATIONS, RECORDKEEPING, AND REPORTING

4.1 Modifications

The PMP must be periodically modified to reflect changes in treatment system equipment, or changes to the routine maintenance schedule that occur as a result of experience gained through operation on the system. The Plan should be modified if any of the following are true:

- PMP maintenance is required at intervals shorter than provided for in manufacturers' schedule.
- PMP does not address all maintenance tasks, as indicated through actual operations over time.
- Through experience it is determined that additional maintenance task can be introduced that prevent a recurring maintenance issue.

The PMP will be modified as appropriate.

4.2 Recordkeeping

The PMP will be kept on site, for reference by site operating personnel. The PMP will be made available to EGLE personnel, for review, as requested.

APPENDIX A

Routine Maintenance Schedule

MAINTENANCE SCHEDULE

<u>FREQUENCY</u>	<u>CHECK</u>
Daily	<ul style="list-style-type: none">A. Fill out the Gas Compression System Data Log.B. Visually inspect unit - repair any breaks, leaks, and loose wires.C. Follow all Manufacturers' Recommendations in Section 7.D. Test Lamps by pushing the RUN Lamp and the ALARM/SHUTDOWN Lamp.
Two Months	<ul style="list-style-type: none">A. Lubricate Blower(s) per Blower Manufacturer's instructions.
Three Months	<p>Turn system off and perform the following procedures:</p> <ul style="list-style-type: none">A. Check Blower(s) - Turn the BLOWER switch to the "TEST" position. Verify that the selected blower starts smoothly and operates properly. After the blower has ramped to maximum speed, turn the BLOWER switch to the "AUTO" position and verify that the blower stops properly. Repeat test for all blowers.B. Zero out the pressure, delta pressure, and vacuum gauges by closing off the valves in the gas lines to the gauges and opening the valves in the tees to atmosphere. Adjust the zeroing screw until the needle points to zero.C. Remove the 8" blind flange inspection port on the demister and remove any debris that has collected.D. If the pressure drop across the demister reaches two times it's original value, open up the top of the demister and pull out the element. There is a handle at the top that is attached to the demister element. Hose the element down opposite of landfill gas flow with high pressure water and put it back in the demister container.
Annually	<p>Shut the System down and perform the following checks:</p> <ul style="list-style-type: none">A. Check for loose bolts on the structure and at the flanges.

APPENDIX B

Troubleshooting Guide

TROUBLESHOOTING ALARM AND SHUTDOWN ANNUNCIATION

Problem	Cause	Solution
VFD 1..3 Fault Shutdown.	<ol style="list-style-type: none"> 1). Variable Frequency Drive in fault state. 	<ol style="list-style-type: none"> 1). Refer to Section 7-40 in this manual under troubleshooting faults.
FLT-301 & 302 High Condensate Level Alarm & Shutdown.	<ol style="list-style-type: none"> 1). Condensate is at or above these levels. 2). Faulty level switches. 	<ol style="list-style-type: none"> 1). Blockage. Clean out bottom of demister or piping. 2). Replace faulty level switches.
Low Flare Flow Alarm and Shutdown.	<ol style="list-style-type: none"> 1). Flare flow rate below system's "Low Flow Setpoints". 2). Restriction of flow. 	<ol style="list-style-type: none"> 1). Adjust flow to higher flow rate or lower "Low Flow Setpoints. (Do not operate below manufacturer's designed flow rate.) 2). Check valving for proper positioning or condensate blockage.
No Flow Condition Shutdown.	<ol style="list-style-type: none"> 1). No flow to end users 2). No flow signal from transmitter. 	<ol style="list-style-type: none"> 1). Verify valves are open on system and pipeline 2). Verify transmitter valves are correct. Verify current signal from transmitter. Faulty analog input module
Engine 1 & 2 Fail Alarm.	<ol style="list-style-type: none"> 1). No flow to engines 2). No flow signal from transmitter. 	<ol style="list-style-type: none"> 1). Verify valves are open on GHS and pipeline 2). Verify transmitter valves are correct. Verify current signal from transmitter. Faulty analog input module.
Flare Shutdown Valve Fail to Close Shutdown.	<ol style="list-style-type: none"> 1). Shutdown valve not closing properly. 2). Limit switches out of range. 3). Actuator linkage failed. 	<ol style="list-style-type: none"> 1). Valve sticking or blocked open. 2). Adjust limit switches. 3). Replace if adjustment doesn't work.
High Inlet Vacuum Alarm and Shutdown.	<ol style="list-style-type: none"> 1). Landfill wells not opened sufficiently. 2). Condensation blocking inlet. 3). Operating system out of designed range. 	<ol style="list-style-type: none"> 1). Open wells. 2). Pump out remote knockout vessels. 3). Adjust flowrate or vacuum setpoint within ranges for proper landfill tuning.

Low Control Panel Temperature Alarm	<ol style="list-style-type: none"> 1). Breaker is off or tripped. 2). Heater is faulty. 	<ol style="list-style-type: none"> 1). Reset breaker. Turn on. 2). Replace heater.
High Control Panel Temperature Alarm	<ol style="list-style-type: none"> 1). Heater setting is too high. 2). Air conditioner thermostat setting too high. 3). Breaker is off or tripped 	<ol style="list-style-type: none"> 1). Setting needs to be turned down during summer months. 2). Setting needs to be turned down during summer months. 3). Reset breaker. Turn on.
Specific Gravity Calculation Error Alarm.	<ol style="list-style-type: none"> 1). Operator input value out of range. 	<ol style="list-style-type: none"> 1). Check your input selections. The total of all inputs cannot exceed 100%.
VFD-1..3 Run Signal Fail Shutdown.	<ol style="list-style-type: none"> 1). VFD Input selection. 2). VFD is Off. 	<ol style="list-style-type: none"> 1). Make sure that VFD is set to remote input, not direct. 2). Close VFD Disconnect.
Blower 301 & 302 High Vibration Alarm and Shutdown.	<ol style="list-style-type: none"> 1). Blower/Motor Coupling Alignment. 2). Blower/Motor Bearings. 3). Blower/Motor. 	<ol style="list-style-type: none"> 1). Check alignment, correct as necessary. 2). Refer to Section 7-41 in this manual for Manufacturer's troubleshooting literature. 3). Make sure that devices are mounted securely to base frame.
High LFG % Oxygen Alarm & Shutdown	<ol style="list-style-type: none"> 1). Alarm & Shutdown setpoint set too low. 2). Broken pipe/Loose flanges. 3). Overdrawing well field. 	<ol style="list-style-type: none"> 1). Adjust setpoints. 2). Repair piping, tighten flanges. 3). Adjust wells.
High Inlet Temperature Alarm & Shutdown	<ol style="list-style-type: none"> 1). Faulty T/C or module. 2). Alarm & Shutdown setpoint set too high. 	<ol style="list-style-type: none"> 1). Replace T/C or module. 2). Adjust setpoints.
Low LFG % Methane Alarm	<ol style="list-style-type: none"> 1). Alarm & Shutdown setpoint set too low. 2). Broken pipe/Loose flanges. 3). Overdrawing well field. 	<ol style="list-style-type: none"> 1). Adjust setpoints. 2). Repair piping, tighten flanges. 3). Adjust wells.
High Pipeline Flow Rate Alarm & Shutdown	<ol style="list-style-type: none"> 1). Alarm & Shutdown setpoints set too high. 	<ol style="list-style-type: none"> 1). Adjust setpoints.

Flare Start Frequency Alarm	<ol style="list-style-type: none"> 1). Alarm & Shutdown setpoint set too close to available flow. 2). Low flare temp setpoint too low. 	<ol style="list-style-type: none"> 1). Adjust setpoints. 2). Adjust setpoint.
GAC Fault Alarm	<ol style="list-style-type: none"> 1). GAC has fault condition 2). No power to GAC 	<ol style="list-style-type: none"> 1). Reset fault at GAC (See manufacturer's literature section 7-10) 2). Restore GAC power.
High Blower or Pipeline Discharge Temperature Alarm and Shutdown	<ol style="list-style-type: none"> 1). Excessive temperature at thermocouple 2). Setpoints set too low. 	<ol style="list-style-type: none"> 1). Check manual valves on blower discharge. 2). Adjust setpoints. Faulty thermocouple module.
Condensate Pump Motor Overload Alarm.	<ol style="list-style-type: none"> 1). Incoming amps exceed heater pak setting. 2). Faulty Motor/Pump. 	<ol style="list-style-type: none"> 1). Adjust amp. Setting on heater pak. 2). Replace.
Cooler Low Discharge Temperature Alarm	<ol style="list-style-type: none"> 1). VFD is in manual mode. 2). Alarm & Shutdown setpoints set too high. 	<ol style="list-style-type: none"> 1). Change Man/Auto control to "AUTO". Check "Start Auto Control Below Setpoint". Adjust setpoint to a greater value. 2). Adjust setpoints.
Cooler High Discharge Temperature Alarm	<ol style="list-style-type: none"> 1). Alarm & Shutdown setpoints set too low. 2). Cooler VFD setpoint out of range. 	<ol style="list-style-type: none"> 1). Adjust setpoints. 2). Change Man/Auto control to "AUTO". Check "Start Auto Control Below Setpoint". Adjust setpoint to a greater value.
Blower Surge Control Valve Failed Open Alarm & Shutdown	<ol style="list-style-type: none"> 1). When flow drops at or below the open surge control setpoint and limit switches do not close. 	<ol style="list-style-type: none"> 1). Limit switches need adjustment or faulty actuator.
Run Clock Off Alarm	<ol style="list-style-type: none"> 1). System Start/Stop parameters set to operate on a timed schedule. 	<ol style="list-style-type: none"> 1). System Start/Stop parameters have been modified for ON/OFF operations. Refer to the Touchscreen (Help menu under Run Clock operations) or Section 4 in this manual under System Operation Information, Section F.

Condensate Pump Run Signal Fail Alarm	1). Overload Tripped. 2). Breaker Open.	1). Reset Overload/Check current setting on overload. 2). Reset breaker.
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APPENDIX C

Manufacturers Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST FOR FLARE STATION
JOB #1634 Davidson

Device	Part Number	Reference Designator
CPU	3592	CP-PLC-1
Analog Input Module	969	CP-AI-1..2
Thermocouple Input Module	439	CP-AI-3..4
Analog Output Module	3583	CP-AO-1
Digital Input Module	446	CP-DI-1..2
Digital Input Module	4712	CP-DI-3
Power Supply	1702	CP-E/E-1
Relay Module	468	CP-RM-1
Relay Module	3102	CP-RM-2
Surge Arrester	129	CP-SSR-1
Surge Arrester	469	CP-SSR-2
Surge Arrester	470	CP-SSR-3
Surge Arrester	471	CP-SSR-4

APPENDIX D

CAT Maintenance Schedule

i02479762

**Maintenance Interval Schedule
(Landfill)**

SMCS Code: 1000; 4450; 7500

S/N: MAD1-Up; JBX1-Up

S/N: HAT1-Up; JBZ1-Up

Ensure that all safety information, warnings and instructions are read and understood before any operation or any maintenance procedures are performed.

The user is responsible for the performance of maintenance, including all adjustments, the use of proper lubricants, fluids, filters, and the replacement of components due to normal wear and aging. Failure to adhere to proper maintenance intervals and procedures may result in diminished performance of the product and/or accelerated wear of components.

Use mileage, fuel consumption, service hours, or calendar time, WHICHEVER OCCURS FIRST, in order to determine the maintenance intervals. Products that operate in severe operating conditions may require more frequent maintenance.

Note: Before each consecutive interval is performed, all maintenance from the previous interval must be performed.

When Required

Cooling System Coolant Sample (Level 2) - Obtain	86
Engine Air Cleaner Element - Replace	89
Engine Oil - Change	92
Fuel Metering Valve - Check	98
Generator - Dry	101
Generator Set - Test	104
Insulation - Test	114
Overhaul Considerations	122
Space Heater - Check	125
Stator Winding Temperature - Measure/Record ..	126
Throttle Control Valve - Check	126
Valve Stem Projection - Measure/Record	128

Daily

Air Starting Motor Lubricator Oil Level - Check	77
Air Tank Moisture and Sediment - Drain	77
Bearing Temperature - Measure/Record	81
Cooling System Coolant Level - Check	84
Engine Air Cleaner Service Indicator - Inspect	91
Engine Oil Level - Check	95
Fuel System Fuel Filter Differential Pressure - Check	99
Fumes Disposal Filter Differential Pressure - Check	100

Generator Load - Check	104
Power Factor - Check	123
Voltage and Frequency - Check	130
Walk-Around Inspection	131

Initial 250 Service Hours

Crankcase Blowby - Measure/Record	87
Cylinder Pressure - Measure/Record	89
Valve Stem Projection - Measure/Record	128

Every 250 Service Hours

Battery Electrolyte Level - Check	78
Cooling System Coolant Sample (Level 1) - Obtain	85
Cooling System Supplemental Coolant Additive (SCA) - Test/Add	86
Engine Oil Sample - Obtain	96
Fumes Disposal Filter - Drain	99

Initial 1000 Service Hours

Engine Speed/Timing Sensor - Clean/Inspect	97
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Every 1000 Service Hours

Aftercooler Condensation - Drain	76
Alternator - Inspect	78
Belts - Inspect/Adjust/Replace	81
Crankcase Pressure - Measure	88
Crankshaft Vibration Damper - Inspect	88
Engine Crankcase Breather - Clean	91
Engine Oil Filter - Change	94
Engine Valve Lash and Bridge - Adjust	98
Gas Pressure Regulator Condensation - Drain ..	100
Hoses and Clamps - Inspect/Replace	105
Ignition System Timing - Check/Adjust	113
Inlet Air System - Inspect	113
Radiator - Clean	124
Water Pump - Inspect	132

Every 2000 Service Hours

Bearing (Ball) - Lubricate	78
Engine Speed/Timing Sensor - Clean/Inspect	97
Generator - Inspect	102
Generator Set Vibration - Inspect	105
Ignition System Spark Plugs - Inspect/Adjust/Replace	107
Stator Lead - Check	126

Every Year

Cooling System Coolant Sample (Level 2) - Obtain	86
--	----

Every 4000 Service Hours

Air Starting Motor Lubricator Bowl - Clean	76
Compressor Bypass - Check	82
Crankcase Blowby - Measure/Record	87
Cylinder Pressure - Measure/Record	89

Engine Mounts - Check	92
Engine Protective Devices - Check	96
Starting Motor - Inspect	125
Turbocharger - Inspect	127

Between 7500 and 8000 Service Hours

Overhaul (Top End)	120
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Every 8000 Service Hours

Fumes Disposal Filter Element - Replace	100
Rotating Rectifier - Check	124
Varistor - Test	130
Water Temperature Regulator - Replace	132
Winding - Test	133

Between 22 500 and 24 000 Service Hours

Overhaul (In-Frame)	117
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Every 24 000 Service Hours or 3 Years

Cooling System Coolant (NGEC) - Change	82
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Between 37 500 and 40 000 Service Hours

Overhaul (Major)	118
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Between 50 000 and 100 000 Service Hours

Bearing - Inspect	79
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**STARTUP, SHUTDOWN, MALFUNCTION PLAN
LANDFILL GAS TREATMENT & COMPRESSION SYSTEM
BLUE WATER RENEWABLES, LLC
SMITH'S CREEK, MI**

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**STARTUP, SHUTDOWN, MALFUNCTION PLAN
LANDFILL GAS TREATMENT AND COMPRESSION SYSTEM
BLUE WATER RENEWABLES, LLC
SMITHS CREEK, MI**

APPENDICES

APPENDIX A: SSM Recordkeeping Forms, including Completed Forms

APPENDIX B: Summary of SSM Plan Revisions

STARTUP, SHUTDOWN, MALFUNCTION PLAN

LANDFILL GAS TREATMENT AND COMPRESSION SYSTEM

BLUE WATER RENEWABLES, LLC

1.0 INTRODUCTION

1.1 Background

This Startup, Shutdown, and Malfunction (SSM) Plan was prepared to satisfy the requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for municipal solid waste (MSW) landfills (40 CFR Part 63, subparts A and AAAA). The purpose of the NESHAP is to prevent excess emissions of hazardous air pollutants (HAPs) during a startup, shutdown, or malfunction event of the landfill gas collection and control system (LFGCCS) and associated monitoring equipment. This Plan was specifically prepared for the Smiths Creek Landfill (SCL), located at 6779 Smiths Creek Road, Smiths Creek, St. Clair County, Michigan. The SCL is a licensed Type II MSW landfill, owned by the County of St. Clair, Michigan.

This SSM Plan should be followed during all SSM events at SCL. The Plan identifies the procedures for operating and maintaining the LFGCCS during SSM events. The Plan identifies procedures to adequately provide corrective actions to repair the malfunctioning equipment as soon as practicable and to minimize excess emissions of HAPs. Recordkeeping documents and reporting requirements are also included.

In November of 2011, a landfill gas to energy project owned and operated by Blue Water Renewables (BWR) will begin initial operation. As part of the landfill gas to energy project, operation of a new blower skid and existing flare will be performed by BWR staff under the guidance and supervision of SCL. The new BWR blower skid will become the default primary mover of LFG at SCL and will compress it for the purpose of power generation. Excess LFG not used power generation will be sent to the existing flare for destruction. SSM events related to the Open Flare Control Device will be recorded by BWR while operating the BWR blower skid and SCL flare and transmitted to SCL for review and further action. In the event of a prolonged malfunction and/or shutdown of the BWR blower skid, operation of the flare will be turned back over to SCL, and its blower skid will be restarted as the alternate primary mover of LFG.

1.2 Definitions

The NESHAP defines the following terms:

Startup: “the setting in operation of an affected source or portion of an affected source for any purpose”.

Shutdown: “the cessation of operation of an affected source or portion of an affected source for any purpose”.

Malfunction: “any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.”

1.3 Excluded Components

The following items are not included in the requirements of the NESHAP or this SSM Plan:

- Failure of portable analyzers used to monitor landfill gas quality or conduct surface emissions monitoring (i.e., GEM, EAGLE, FID).
- Exceedances of parameters monitored monthly at individual landfill gas (LFG) extraction wells (temperature greater than 55 degrees Celsius, zero or positive pressure, and either nitrogen concentration greater than 20% or oxygen concentration greater than 5%).
- Exceedances of required quarterly monitoring of methane concentration at the landfill surface (surface emissions greater than 500 parts per million above background concentration).
- IC engines operated on treated landfill gas.

The Smiths Creek Landfill provides landfill gas to BWR, for use as fuel in the production of electricity by internal combustion engines. Because the gas is treated for sale

1.4 Included Components

The following items are included in the requirements of the NESHAP and this SSM Plan:

- The landfill gas collection system including, but not limited to, header piping, extraction wells, collection trenches, driplegs, condensate knockout pots, condensate/leachate pumps, and valves.
- The landfill gas control system including, but not limited to the open flare, blower and motor, compressors, solar flares, ignition and operation equipment, continuous recording devices.
- Any future gas treatment system, such as leachate evaporation, landfill gas treatment and compression for use as fuel, and electrical generating equipment.

1.5 Contacts

All reporting information related to the SSM Plan should be submitted to the Department of Environment, Great Lakes, and Energy (EGLE) at the following address:

EGLE Air Quality Division

Mailing Address:

Southeast Michigan District Office

27700 Donald Court

Warren, MI 48092-2793

Facility Contact

Blue Water Renewables, LLC

Smiths Creek Landfill

6779 Smiths Creek Road

Smiths Creek, MI 48074

Jeff Neumann, Facility Manager

Cell Phone: 734-216-6979

SSM Plan – Gas Treatment & Compression System
Blue Water Renewables, LLC
November 2022

Owner Contact

DTE Biomass Energy
One Energy Plaza, 400 WCB
Detroit, MI 48226

Doug Ayers, Director – Operations
Cell Phone: 734-678-3572

Corporate Environmental Contact

DTE Vantage – Environmental Affairs
One Energy Plaza, 400 WCB
Detroit, MI 48226

Maureen Bennett, Environmental Engineer
Cell: 734-834-0005

2.0 SSM SCENARIOS

For SSM recordkeeping and reporting purposes, the LFGCCS has been divided into three main components; the collection system (including wells, piping, valves, and driplegs), the open flare (including the skid mounted flare system and mechanical dripleg and pumping station), and the solar flares. Likely malfunctions for each of these main components are listed below along with immediate and corrective actions to be taken. For each SSM event, an SSM Recordkeeping Form, included in Appendix A, must be completed. The person completing the Form will refer to the list below to identify the component affected, the likely malfunction, the immediate action, and the recommended corrective action.

2.1 Collection System

Likely Malfunction	Immediate Action	Corrective Action
No/low flow due to pinched/damaged/settled piping/frozen piping	Open or close control valves to allow continued flow to the control system and to prevent unnecessary air intrusion.	Determine location of damage/settling. Repair piping by replacing damaged pipe, regrading settled areas, or thawing/covering frozen pipe.
Failure of control valves	If LFG is leaking to atmosphere or causing air intrusion, close/open surrounding valves and/or wellheads.	Isolate affected area and replace valve.
Failure of an extraction well due to: frozen or broken flexhose, fire, high water level	If LFG is leaking to atmosphere or causing air intrusion, close/open surrounding valves and/or wellheads or temporarily cap wellhead.	Replace/repair flexhose, isolate well/remove vacuum to control fire, pump extraction well or surrounding leachate collection system. If required, replace extraction well.
Failure of a dripleg	Isolate dripleg by closing surrounding valves to prevent air intrusion.	Refill dripleg with water, cleanout blockage, or if necessary excavate area and check for damage.
Collection system expansion	Isolate header line affected by the expansion by closing surrounding valves to prevent air intrusion.	Complete expansion of the LGCCS using best available engineering practices.

2.2 Open Flare Control Device

Likely Malfunction	Immediate Action	Corrective Action
Wind/storm blowing out flame	Flare system automatically closes actuator valve to prevent LFG venting.	Follow SOP for flare startup.
High water level in the mechanical dripleg (Condensate Tank Full)	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Pump condensate from mechanical dripleg into approved storage/transportation container.
Failure/malfunction of the mechanical dripleg pump	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Repair pump or use temporary pump to remove condensate.
Not able to restart due to ambient temperature, frozen pilot	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Use override function to initiate startup at lower temperature. Thaw the pilot.
Failure of blower, including bearings, belts, fan wheel, etc.	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Repair blower using appropriate replacement parts.
Failure of motor	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Repair motor using appropriate replacement parts.
Failure of compressor, airlines, fittings, actuators, solenoids	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting. If actuator fails, close the flare inlet valve.	Repair the failed component using appropriate methods/replacement parts.
Failure of the programmable logic control (PLC) unit	If shutdown occurs, the flare system automatically closes the actuator valve to prevent LFG venting. If actuator fails, close the flare inlet valve	Repair the PLC unit as appropriate if replacement parts are available. Replace with new unit if unit cannot be repaired.
Too much oxygen in the gas or lack of LFG flow to the flare	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Identify cause of oxygen or blockage of flow and repair according to SSM Plan. If oxygen level is due to extraction wells that are out of compliance, adjust wellfield to compensate.

Likely Malfunction	Immediate Action	Corrective Action
Loss of electricity	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Monitor surface emissions until electrical supply is restored to demonstrate compliance with air emissions standards.
Failure of the flow and temperature recorder and/or meter – out of paper, out of ink, paper jam, electrical malfunction	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting. Manually verify ongoing operation of the control device.	Replace affected component; paper, ink, pens, recorder, meter. Repair electrical supply as necessary.
Not able to restart due to lack of pilot fuel (propane)	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Switch to existing backup fuel supply and replenish primary supply.
Failure of the thermocouple	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Replace thermocouple with onsite backup unit.
Failure of the flame arrestor (clogging, freezing, etc.)	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Clean flame arrestor or replace if necessary.
Failure of the knockout pot, including plugging of the filter, high water level, etc.	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Clean the filter, remove collected water.
Shutdown of flare due to high water levels in flare stack	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Empty flare stack drain(s).
Accidental pressing of emergency STOP button	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Follow SOP for flare startup.
Routine Maintenance	If shutdown occurs, flare system automatically closes actuator valve to prevent LFG venting.	Follow SOP for flare startup.

2.3 Solar Flare Control Device

Likely Malfunction	Immediate Action	Corrective Action
Failure of the datalogger, including the battery	Replace the battery on the datalogger and attempt data recovery.	Replace the battery or datalogger using onsite spare equipment.
Failure of the spark plug	Close stack valve to prevent LFG venting. Check the battery and the solar panel to ensure power supply.	Replace/repair the spark plug as necessary.
Failure of thermocouple	Close stack valve to prevent LFG venting. Note if spark is still present and note if flame is present.	Replace/repair the thermocouple.
Freezing, clogging, other failure of the header piping	Close stack valve to prevent LFG venting. Remove clogs if possible.	Repair header piping by removing clogs, drain collected water.
Failure of the battery/solar panel	Close stack valve to prevent LFG venting.	Repair/replace the battery/solar panel
Clogging or other failure of the flame arrestor	Close stack valve to prevent LFG venting.	Clean or replace the flame arrestor as necessary.
Failure of the wind screen	Close stack valve to prevent LFG venting.	Repair/replace the wind screen.

3.0 STANDARD OPERATING PROCEDURES FOR SCL BLOWER SKID/FLARE

Following are standard operating procedures (SOP) for startup and shutdown events of the control system (open flare). These SOPs must be followed during every startup and shutdown event while the BWR Blower Skid is sending gas to the flare.

3.1 Control System Startup

1. Check for unsafe conditions in the surrounding area, i.e. exposed fan belts, leaking LFG or propane gas, etc.
2. Check that the valves are open and in proper operating position
3. Reset the emergency stop button if necessary
4. Check the fuel supply for the spark ignition (propane gas)
5. Check for adequate electrical supply to the control system. Reset circuit breakers or other controls if necessary.
6. Start the control system by turning the “flare power” dial “on” and pressing the “start” button
7. Verify that the system is operating properly (check flow rate, temperature, and pressure)

3.2 Control System Shutdown

1. Check for unsafe conditions in the surrounding are, i.e. exposed fan belts, leaking LFG or propane gas, etc.
2. Shutdown the control system by any of the following: press the emergency stop button; turn the “Flare Power” knob to off, turn off the electrical supply using the main electric panel switch. In an emergency where access to the fenced control system area is blocked, the two LFG header pipe valves near Cell A can be closed, thereby stopping LFG flow to the flare.
3. Check that the actuator valve on the flare skid is in the “closed” position

4. Verify that the system is properly shutdown (check flow rate, temperature, pressure).

4.0 MODIFICATIONS, RECORDKEEPING, AND REPORTING

4.1 Modifications

The SSM Plan must be periodically modified to reflect changes in the landfill equipment, operations, or procedures. The Plan should be modified if any of the following are true:

- SSM Plan does not address an SSM event that has occurred.
- SSM Plan fails to provide for the operation of the air pollution control and monitoring equipment during an SSM event in a manner consistent with safety and good air pollution control practices to minimize emissions.
- SSM Plan does not provide adequate procedures for correcting the malfunctioning process and/or monitoring equipment as quickly as practicable.
- SSM Plan includes an event that does not meet the definition of an SSM event.
- SSM Plan does not address or adequately address a malfunction event. If this is true, the SSM Plan must be revised within 45 days after the event to include detailed procedures for operating and maintaining the LFGCCS during similar malfunctions. The revised Plan should include a corrective action program for similar malfunctions.

Each revision or modification of the SSM Plan must be reported in the semi-annual SSM report (detailed below). Revisions or modifications to the Plan do not constitute Title V air permit revisions. Previous versions of the SSM Plan should be available for inspection by the US EPA or the EGLE for five (5) years after the revisions are made. In order to track revisions or modifications to the plan, a summary table of revisions is included in Appendix B.

4.2 Recordkeeping

The SSM Plan should be kept as a record of all SSM events and made available to the US EPA or EGLE as requested. An SSM Report Form containing the required recordkeeping information is included in Appendix A. If an SSM event occurs, the form should be filled out completely and placed in Appendix A of this Plan.

4.3 Reporting

4.3.1 Immediate SSM Reports

If the actions taken during an SSM event were not consistent with this SSM Plan and BWR exceeded the applicable emission limitation in the landfill NESHAP, BWR must report the actions by telephone or fax within two (2) working days after commencing actions inconsistent with the Plan. Also, a letter must be sent within seven (7) working days after the end of the SSM event. The letter should include the following information:

- Name, title, and certifying signature of the owner or operator or other responsible official.
- Explanation of the circumstances of the event.
- The reasons BWR did not follow this SSM Plan.
- A description of all excess emissions and/or parameter monitoring exceedances believed to have occurred during the SSM event.

4.3.2 Semi-Annual Reports

If an SSM event occurs during a semiannual reporting period (January 1 through June 30 and July 1 through December 31), the SCL must submit a semi-annual report containing the following information:

- Name, title, and certifying signature of the owner or operator or other responsible official.
- Statement that the actions taken during the SSM event were consistent with the SSM Plan (if that is true).
- Identification of any instance where any action taken during an SSM event (including actions taken to correct a malfunction) is not consistent with the SSM Plan, but the Site did not exceed any applicable emission limitation in the NESHAP.

- The number, duration, and brief description of each SSM event which caused, or may have caused, an applicable emission limit to be exceeded.
- If the SSM Plan was revised during the semi-annual reporting period to reflect changes to the MSW landfill operations or procedures, BWR must report each revision to the SSM Plan in the semi-annual report.

The semi-annual SSM report may be combined with the NSPS report. The NSPS report was previously required annually. However, the NESHAP now requires the NSPS report to be submitted semi-annually.

APPENDIX A

BLUE WATER RENEWABLES, LLC

SSM Recordkeeping Forms

**Bluewater Renewables
Startup/Shutdown/Malfunction Report Form**

Section 1 - All Events

List effected piece(s) of equipment								
Type of Event	Military Time				Duration (hours)	Event Code (see back of form)	SOP* Followed?	
	Date/Time Start		Date/Time End				Yes	No**
Startup								
Shutdown								
Malfunction							Complete Section 2 Below	

*Standard Operating Procedure (SOP) for Flare Startups (Manual & Automatic) and Shutdowns are provided in SSM Plan

If SOP in SSM Plan was not followed, **notify site engineer immediately.

Section 2 - Malfunction Events Only

<input checked="" type="checkbox"/> Check one of the following for each step:			
Step	Corrective Action Procedures for All Malfunctions	Procedure completed	Procedure Not Applicable
1.	Determine if landfill gas is being released to the air (can you smell landfill gas, or measure/detect gas flow?).	<input type="checkbox"/>	
2.	If landfill gas is being released to the air, notify personnel on "Contact List".	<input type="checkbox"/>	<input type="checkbox"/>
3.	Determine if the malfunction is causing an unsafe operating condition (air entering landfill or piping, smoking, vibration, or other problem), which may harm people, the environment or the landfill gas control equipment.	<input type="checkbox"/>	
4.	If unsafe operating condition exists, or landfill gas is being released to the air, stop (if possible) landfill gas flow.	<input type="checkbox"/>	<input type="checkbox"/>
5.	If Control device or other system component is shutdown due to Step 4, follow Shutdown SOP and Complete Section 1 - "Shutdown".	<input type="checkbox"/>	<input type="checkbox"/>
6.	Determine if other personnel/resource (qualified technician, electrician, consultant or other) are needed for malfunction diagnosis.	<input type="checkbox"/>	
7.	If additional personnel needed, notify qualified personnel: a. Record contact name, date and time: _____ b. Contact site representative with information recorded in #7.a.	<input type="checkbox"/>	<input type="checkbox"/>
8.	Start malfunction diagnosis.	<input type="checkbox"/>	
9.	Determine if other resources are needed to fix the malfunction (qualified technician, electrician, contractor, on-site resources, manufacturer's representative, or other).	<input type="checkbox"/>	
10.	If additional resources needed, contact qualified resource: a. Record contact name, date and time: _____ b. Contact site representative with information recorded in #10.a.	<input type="checkbox"/>	<input type="checkbox"/>
11.	Fix the malfunction.	<input type="checkbox"/>	
12.	Once the malfunction is fixed, re-start the system per SOP if it had been shut down, and record start-up times and dates on this form.	<input type="checkbox"/>	<input type="checkbox"/>
13.	Record date that malfunction occurred, date that malfunction was repaired, and total time that system was out of service in boxes in Section 1 of this form.	<input type="checkbox"/>	
14.	Sign this form, copy it, and place it in the Start-up, Shutdown, Malfunction file.	<input type="checkbox"/>	
15.	If the procedures listed above were not followed, contact the site engineer immediately.	<input type="checkbox"/>	<input type="checkbox"/>

Date Form Filled Out: _____ **Title:** _____

EVENT CODES

For Start-ups and Shutdowns:

Startup: The setting in operation of an affected source or portion of an affected source for any purpose.

<u>Code</u>	<u>Event</u>
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Shutdown: The cessation of operation of an affected source or portion of any source for any purpose.

- | | |
|----|---|
| 1 | Maintenance |
| 2 | Suspected Collection System Malfunction |
| 3 | Suspected Control Device Malfunction |
| 4 | Suspected Continuous Monitoring System Malfunction (Temperature/Flow/Other) |
| 5 | Training |
| 6 | Gas System Construction/Expansion |
| 99 | Other (Describe) Manual startup/shutdown. 480 VAC and 4160 VAC Breaker testing. |

For Malfunctions:

Malfunction: Any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

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|----|---|
| 10 | Automatic shutdown of control device by designed protective systems |
| 11 | Autodialer Callout |
| 12 | Shutdown alarms that result in the device not shutting down |
| 13 | Unalarmed shutdown |
| 14 | Control Device Smoking |
| 15 | Inspection identified malfunction |
| 16 | Loss of power - utility down |
| 17 | Loss of power - unknown |
| 18 | Damaged Well, Header or Lateral Piping |
| 19 | Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc. |
| 20 | Condensate Knock-out Problems |
| 21 | Collection Piping Blockages |
| 22 | Problems due to Settlement |
| 23 | Loss of phase |
| 24 | Blower overload condition |
| 25 | Blower bearing failure |
| 26 | Broken belts (if belt-drive) or broken coupling (if direct-drive) in blower |
| 27 | Continuous Monitoring System Malfunction - Thermocouple |
| 28 | Continuous Monitoring System Malfunction - UV Scanner |
| 29 | Continuous Monitoring System Malfunction - Flow Monitor |
| 30 | Continuous Monitoring System Malfunction - Flow Recorder |
| 31 | Continuous Monitoring System Malfunction - Temperature Recorder |
| 32 | Act of God (i.e., lightning, wind, etc.) |
| 99 | Other (Describe) |

APPENDIX B

BLUE WATER RENEWABLES. LLC

Summary of SSM Plan Revisions

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Summary of SSM Plan Revisions

Name of Person Revising Plan	Date of Revision	Page Number(s) Revised	Reason for Revision
Maureen Bennett	11/3/22	1-3 and 1-4	Updated contact info