This is the Flexible Group Landfill Template for New Source Performance Standards (NSPS), Subpart XXX, Municipal Solid Waste (MSW) landfills which have Non-methane organic compounds (NMOC) emissions less than 34 megagrams per year. These landfills have commenced construction, reconstruction, or modification after July 17, 2014 is subject to NSPS Subpart XXX.

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. Other emission units may be needed for the ROP. The template requires the landfill to continually calculate its NMOC emissions and submit the results annually.

The requirements for operating the collection and control system for the landfill are not included in this table. If the facility enters the operational stage during the time of the ROP, it will have to comply with those applicable conditions of the Subpart including submission of an amended ROP application.

Blue text is guidance or notes on the use of the template. Delete all blue text prior to issuing the final permit or submitting it with a permit application. Read through all conditions. If this template is being used for an ROP Reopening or Renewal, and the conditions were established in a PTI, the appropriate footnotes which reference enforceability must be added to each applicable condition in the template.

Red text identifies options. Select the option that applies to the source and change the text to black. Delete red text that does not apply and renumber conditions if necessary

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.

{REMOVE ANY EMISSION UNITS THAT ARE NOT AT THE SOURCE OR ADD EMISSION UNITS THAT ARE AT THE SOURCE}

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 after July 17, 2014. The MSW landfill has a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions less than 34 megagrams per year. This MSW landfill is subject to the requirements of 40 CFR Part 60, Subpart XXX.	{Use mm-dd-yyyy}	FGLANDFILL-XXX<34

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.

{REMOVE THIS TABLE IF THERE ARE NO FLEXIBLE GROUPS}

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-XXX<34	A MSW landfill that commenced construction, reconstruction, or modification after July 17, 2014. The MSW landfill has a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions less than 34 megagrams per year. This MSW landfill is subject to the requirements of 40 CFR Part 60, Subpart XXX.	EULANDFILL

FGLANDFILL-XXX<34
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

A MSW landfill that commenced construction, reconstruction, or modification after July 17, 2014. The MSW landfill has a design capacity greater than 2.5 million megagrams and 2.5 million cubic meters, and actual NMOC emissions less than 34 megagrams per year. This MSW landfill is subject to the requirements of 40 CFR Part 60, Subpart XXX.

Emission Unit: EULANDFILL

POLLUTION CONTROL EQUIPMENT

{Enter site specific pollution control equipment or NA}

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

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))**

1. The permittee must determine NMOC mass emission rate by testing at owner's expense, in accordance with Department requirements. Testing must be performed using procedures and calculations, as described in Appendices 5 and 7. No less than 30 days prior to testing, the permittee must submit a complete test plan to the AQD Technical Programs Unit and the appropriate AQD 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. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and the appropriate AQD District Office within 60 days following the last date of the test. **(R 336.2001, R 336.2003, R 336.2004, 40 CFR 60.762(b)(1), 40 CFR 60.764(a))**

    a. Upon completion of each Tier test, the permittee must compare the results to the NMOC mass emission rate standard of 34 Mg per year. If the results are equal to or greater than 34 Mg, then the permittee must move to the next higher tier in accordance with the following: Tier 1 and Tier 2 NMOC mass emission rate must be recalculated annually if the NMOC mass emission rate is less than the standard. **(40 CFR 60.764(a)(2) and (3))**

    b. Tier 2 testing to establish a site-specific NMOC concentration must be performed at least once every five years. **(40 CFR 60.764(a)(3))**

    c. Tier 3 testing must be performed to establish a site-specific methane generation rate constant. **(40 CFR 60.764(a)(4))**

d. Tier 4 testing to determine surface methane emissions, as described in Appendix 5, may be used if Tiers 1 through 3 testing demonstrate NMOC mass emissions equal to or greater than 34 Mg per year. **(40 CFR 60.764(a)(6))**

e. Tier 4 testing must be performed to establish surface methane emissions are below the standard of 500 ppm. **(40 CFR 60.764(a)(6))**

2. Each permittee seeking to use other methods to determine the NMOC concentration or a site-specific methane generation rate constant as an alternative to methods in Tier 2 and Tier 3 must request and have received approval from USEPA prior to submitting a test protocol to AQD. **(40 CFR 60.764(a)(5))**

See Appendices 5 and 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 calculate the annual NMOC emission rates using methods outlined in Appendix 7. **(40 CFR 60.764(a)(1))**

2. The permittee must maintain up-to-date, readily accessible, on-site records of the design capacity report which triggered 40 CFR 60.762(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. The permittee must keep all records on file in a format acceptable to the AQD District Supervisor and make them available upon request. **(40 CFR 60.768(a))**

OPTIONAL:

3. If reporting leachate or other liquids addition under 40 CFR 60.767(k), 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 60.768(j))**

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 received 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 received by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. The permittee must submit an annual NMOC emission rate report to the AQD. This report must contain an annual or 5-year estimate of the NMOC emission rate and all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions. **(40 CFR 60.767(b)(1) and (2))**

5. The permittee must submit any performance test reports to the AQD Technical Programs Unit and the appropriate AQD District Office, in a format approved by the AQD. **(R 336.2001(5))**

6. The permittee must submit an initial design capacity report no later than 90 days after the date of commenced construction, modification, or reconstruction. This report must contain the information described in 40 CFR 60.767(a)(2). **(40 CFR 60.767(a)(1) and (2))**

7. The permittee must submit an amended design capacity report providing notification of an increase in the design capacity of the landfill within 90 days of an increase in the maximum design capacity of the landfill to meet or exceed 2.5 million megagrams and 2.5 million cubic meters. **(40 CFR 60.767(a)(3))**

8. If the permittee elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis and the resulting rate is less than 34 Mg per year, a revised NMOC emission rate report with the recalculated emission rate must be submitted within 180 days of the first calculated exceedance of 34 Mg per year. **(40 CFR 60.767(c)(4)(i))**

9. If the permittee elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant k, as provided in Tier 3 and the resulting NMOC emission rate is less than 34 Mg per year, a revised NMOC emission rate report and the resulting site-specific methane generation rate constant k must be submitted within 1 year of the first calculated emission rate equaling or exceeding 34 Mg per year. **(40 CFR 60.767(c)(4)(ii))**

10. If the permittee elects to demonstrate that site-specific surface methane emissions are below 500 ppm methane, then the owner or operator must submit annually a Tier 4 surface emissions report. The initial Tier 4 surface emissions report must be submitted annually, starting within 30 days of completing the fourth quarter of Tier 4 surface emissions monitoring that demonstrates that site-specific surface methane emissions are below 500 ppm methane. **(40 CFR 60.767(c)(4)(iii))**

11. The permittee must submit a closure report to the AQD 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 60.767(e))**

12. Within 60 days after the date of completing each performance test (as defined in 40 CFR 60.8), the owner or operator 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 Web site (https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert) at the time of the test. The permittee must submit the results of the performance test to the USEPA via the Compliance and Emissions Data Reporting Interface (CEDRI). CEDRI can be accessed through the USEPA's Central Data Exchange (CDX) (https://cdx.epa.gov/). **(40 CFR 60.767(i))**

OPTIONAL: Use if the owner or operator of the affected landfill has employed leachate recirculation or added liquids based on a Research, Development, and Demonstration permit (issued through Resource Conservation and Recovery Act, Subtitle D, Part 258) within the last 10 years for an annual liquids addition report.

13. Annually, the permittee must submit a liquids addition report, to the AQD, within 365 days after the date the previous report was submitted with the following information:

    a. Volume of leachate recirculated (gallons per year) and the reported basis of those estimates (records or engineering estimates). **(40 CFR 60.767(k)(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 60.767(k)(2)**

    c. Surface area (acres) over which the leachate is recirculated (or otherwise applied). **(40 CFR 60.767(k)(3))**

    d. Surface area (acres) over which any other liquids are applied. **(40 CFR 60.767(k)(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 60.767(k)(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 60.767(k)(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 thirteen (13) months after the date of commenced construction, modification, or reconstruction for landfills that commence construction, modification, or reconstruction after August 29, 2016 containing data for the first 12 months after August 29, 2016. **(40 CFR 60.767(k)(7)(ii))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. If the calculated NMOC emission rate is calculated to be equal to or greater than 34 Mg per year or the methane concentration from the surface of the landfill is 500 ppm or greater, the permittee must install a collection and control system in compliance with 40 CFR 60.762(b)(2). Additionally, within 90 days the permittee must apply for a revision of this permit to reflect applicable requirements of 40 CFR Part 60, Subpart XXX. **(R 336.1216(2), 40 CFR 60.762(b)(1)(ii)(A))**

2. The permittee must comply with all applicable provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and XXX. **(40 CFR Part 60, Subparts A and XXX)**

OPTIONAL: Use the following condition only if a major source of HAPs as defined in 40 CFR 63.2.

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)**

Remove these footnotes if no PTIs are associated with this flexible group.

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).

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 provisions 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_2e	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
		HAP	Hazardous Air Pollutant
EGLE	Michigan Department of Environment, Great Lakes, and Energy	Hg	Mercury
		hr	Hour
EU	Emission Unit	HP	Horsepower
FG	Flexible Group	H_2S	Hydrogen Sulfide
GACS	Gallons of Applied Coating Solids	kW	Kilowatt
GC	General Condition	lb	Pound
GHGs	Greenhouse Gases	m	Meter
HVLP	High Volume Low Pressure*	mg	Milligram
ID	Identification	mm	Millimeter
IRSL	Initial Risk Screening Level	MM	Million
ITSL	Initial Threshold Screening Level	MW	Megawatts
LAER	Lowest Achievable Emission Rate	NMOC	Non-methane Organic Compounds
MACT	Maximum Achievable Control Technology	NO_x	Oxides of Nitrogen
MAERS	Michigan Air Emissions Reporting System	ng	Nanogram
MAP	Malfunction Abatement Plan	PM	Particulate Matter
MSDS	Material Safety Data Sheet	PM10	Particulate Matter equal to or less than 10 microns in diameter
NA	Not Applicable		
NAAQS	National Ambient Air Quality Standards	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	pph	Pounds per hour
		ppm	Parts per million
NSPS	New Source Performance Standards	ppmv	Parts per million by volume
NSR	New Source Review	ppmw	Parts per million by weight
PS	Performance Specification	%	Percent
PSD	Prevention of Significant Deterioration	psia	Pounds per square inch absolute
PTE	Permanent Total Enclosure	psig	Pounds per square inch gauge
PTI	Permit to Install	scf	Standard cubic feet
RACT	Reasonable Available Control Technology	sec	Seconds
ROP	Renewable Operating Permit	SO_2	Sulfur Dioxide
SC	Special Condition	TAC	Toxic Air Contaminant
SCR	Selective Catalytic Reduction	Temp	Temperature
SDS	Safety Data Sheet	THC	Total Hydrocarbons
SNCR	Selective Non-Catalytic Reduction	tpy	Tons per year
SRN	State Registration Number	µg	Microgram
TEQ	Toxicity Equivalence Quotient	µm	Micrometer or Micron
USEPA/EPA	United States Environmental Protection Agency	VOC	Volatile Organic Compounds
		yr	Year
VE	Visible Emissions		

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

Appendix 2. Schedule of Compliance

{CHOOSE ONE}

The permittee certified in this ROP application that this stationary source is in compliance with all applicable requirements of this ROP except for the following: {Enter condition number(s)}. As a result, the permittee was required to submit a Schedule of Compliance as defined in Rule 119(a), pursuant to Rule 210(2) and Rule 213(4).

A Schedule of Compliance for any applicable requirements that the permittee is not in compliance with at the time of the ROP issuance is supplemental to, and shall not sanction non-compliance with, the underlying applicable requirements on which it is based.

The permittee shall adhere to this schedule of compliance and submit the required certified progress reports accordingly.

Compliance Plan

The permittee outlined the details of achieving compliance in a narrative compliance plan. The details of the compliance plan are outlined below.

{Insert the narrative details from the Compliance Plan that was submitted}

Schedule of Compliance

The following schedule of compliance conforms with the provisions of Rule 119(a) and Rule 213(4).

Emission Unit/ Flexible Group ID and Condition No.	Applicable Requirement	Remedial Measure	Required Action	Milestone Date	Progress Reports

Progress Reports

The permittee shall submit Certified Progress Reports using the MiEnviro form ROP General Compliance Report. **(R 336.1213(4)(b))**

Progress reports shall contain the following information:

The projected dates for achieving scheduled activities, milestones or compliance as required in the schedule of compliance. **(R 336.1213(4)(b)(i))**

The actual dates that the activities, milestones, or compliance are achieved. **(R 336.1213(4)(b)(i))**

An explanation of why any dates in the Schedule of Compliance were not or will not be met. **(R 336.1213(4)(b)(ii))**

A description of any preventative or corrective measures adopted in order to ensure that the schedule of compliance is met. **(R 336.1213(4)(b)(ii))**

{OR}

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

{CHOOSE ONE}

The following monitoring procedures, methods, or specifications are the details to the monitoring requirements identified and referenced in {Enter emission unit/flexible group}.

{OR}

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

{CHOOSE ONE}

The permittee shall use the following approved formats and procedures for the recordkeeping requirements referenced in {Enter emission unit/flexible group}. Alternative formats must be approved by the AQD District Supervisor.

{OR}

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

The permittee shall use the following approved procedures, to measure the pollutant emissions for the applicable requirements referenced in FGLANDFILL-XXX<34.

Tier 1

The permittee must calculate NMOC mass emission rate utilizing Equation 1 or 2 in Appendix 7, as applicable, and compare it to the standard of 34 Mg per year. **(40 CFR 60.764(a)(2))**

Tier 2

The permittee must determine the NMOC concentration using the following sampling procedure:

The permittee must install at least two sample probes per hectare of landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The sample probes should be located to avoid known areas of nondegradable solid waste.

The permittee must collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using 40 CFR Part 60, Appendix A, Methods 25 or 25C. 40 CFR Part 60, Appendix A, Method 18 may be used to analyze the samples collected by Method 25 or 25C sampling procedure. Taking composite samples from different probes into a single cylinder is allowed; however, equal sample volumes must be taken from each probe. For each composite, the sampling rate, collection times, beginning and ending cylinder vacuums, or alternative volume measurements must be recorded to verify that composite volumes are equal. Composite sample

volumes should not be less than one liter unless evidence can be provided to substantiate the accuracy of smaller volumes. Terminate compositing before the cylinder approaches ambient pressure where measurement accuracy diminishes.

If using Method 18, the permittee must identify all compounds in the sample and, as a minimum, test for those compounds published in the most recent Compilation of Air Pollutant Emission Factors (AP-42), minus carbon monoxide, hydrogen sulfide, and mercury. As a minimum, the instrument must be calibrated for each of the compounds on the list. Convert the concentration of each Method 18 compound to CNMOC as hexane by multiplying by the ratio of its carbon atoms divided by six. If more than the required number of samples is taken, all samples must be used in the analysis.

The permittee must divide the NMOC concentration from 40 CFR Part 60, Method 25 or 25C by six (6) to convert from C_{NMOC} as carbon to C_{NMOC} as hexane. If the landfill has an active or passive gas removal system in place, Method 25 or 25C samples may be collected from these systems instead of surface probes provided the removal system can be shown to provide sampling as representative as the two-sampling probe per hectare requirement. For active collection systems, samples may be collected from the common header pipe before the gas moving or condensate removal equipment. For these systems, a minimum of three samples must be collected from the header pipe.

The permittee must recalculate the NMOC mass emission rate using Equation 1 or Equation 2 in Appendix 7 using the average site-specific NMOC concentration from the collected samples. The permittee must compare results to the standard of 34 Mg per year. **(40 CFR 60.764(a)(3))**

Tier 3

The site-specific methane generation rate constant must be determined using the procedures provided in 40 CFR Part 60, Appendix A, Method 2E. The permittee must estimate the NMOC mass emission rate using **Equation 1** (40 CFR 60.764(a)(1)(i)) or **Equation 2** (40 CFR 60.764(a)(1)(ii)) and using a site-specific methane generation rate constant (k), and the site-specific NMOC concentration as determined in 40 CFR 60.764(a)(3) instead of the default values provided in 40 CFR 60.764(a)(1). The permittee must compare the resulting NMOC mass emission rate to the standard of 34 Mg per year. **(40 CFR 60.764(a)(4))**

Tier 4

The permittee must demonstrate that surface methane emissions are below 500 ppm. Surface emission monitoring must be conducted on a quarterly basis using the following procedures. Tier 4 is allowed only if the landfill owner or operator can demonstrate that NMOC emissions are greater than or equal to 34 Mg/yr but less than 50 Mg/yr using Tier 1 or Tier 2. If both Tier 1 and Tier 2 indicate NMOC emissions are 50 Mg/yr or greater, then Tier 4 cannot be used.

The permittee must measure surface concentrations of methane along the entire perimeter of the landfill and along a pattern that traverses the landfill at no more than 30-meter intervals using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in 40 CFR 60.765(d). The background concentration must be determined by moving the probe inlet upwind and downwind at least 30 meters from the waste mass boundary of the landfill.

Surface emission monitoring (SEM) must be performed in accordance with 40 CFR Part 60, Appendix A, Section 8.3.1 of Method 21 except that the probe inlet must be placed no more than 5 centimeters above the landfill surface; the constant measurement of distance above the surface should be based on a mechanical device such as with a wheel on a pole, except, the owner or operator must use a wind barrier, similar to a funnel, when onsite average wind speed exceeds 4 miles per hour or 2 meters per second or gust exceeding 10 miles per hour. Average on-site wind speed must also be determined in an open area at 5-minute intervals using an on-site anemometer with a continuous recorder and data logger for the entire duration of the monitoring event. The wind barrier must surround the SEM, and must be placed on the ground, to ensure wind turbulence is blocked. SEM cannot be conducted if average wind speed exceeds 25 miles per hour.

Landfill surface areas where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover, and all cover penetrations must also be monitored using a device meeting the specifications provided in 40 CFR 60.765(d).

Each owner or operator seeking to comply with the Tier 4 provisions must maintain records of surface emission monitoring as provided in 40 CFR 60.768(g) and submit a Tier 4 surface emissions report as provided in 40 CFR 60.767(c)(4)(iii).

If after four consecutive quarterly monitoring periods at a landfill, other than a closed landfill, there is no measured concentration of methane of 500 ppm or greater from the surface of the landfill, the owner or operator must continue quarterly surface emission monitoring using the methods specified in this section.

If after four consecutive quarterly monitoring periods at a closed landfill there is no measured concentration of methane of 500 ppm or greater from the surface of the landfill, the owner or operator must conduct annual surface emission monitoring.

If a landfill has installed and operates a collection and control system that is not required by this subpart, then the collection and control system must meet the following criteria: **(40 CFR 60.764(a)(6)(vii))**

(A) The gas collection and control system must have operated for 6,570 out of 8,760 hours preceding the Tier 4 surface emissions monitoring demonstration.

(B) During the Tier 4 surface emissions monitoring demonstration, the gas collection and control system must operate as it normally would to collect and control as much landfill gas as possible.

Appendix 6. Permits to Install

{CHOOSE ONE}

At the time of permit issuance, no Permits to Install have been issued to this facility. Therefore, this appendix is not applicable.

{OR}

{For Initial ROP Issuance}
The following table lists any Permit to Install and/or Operate, that relate to the identified emission units or flexible groups as of the effective date of this ROP. This includes all Permits to Install and/or Operate that are hereby incorporated into Source-Wide PTI No. SWPTI####### v#.#. PTIs issued after the effective date of this ROP, including amendments or modifications, will be identified in Appendix 6 upon renewal.

Permit to Install Number	Description of Equipment	Corresponding Emission Unit(s) or Flexible Group(s)

{OR}

{For ROP Renewals}
The following table lists any PTIs issued or ROP revision applications received since the effective date of the previously issued ROP No. MI-ROP-{SRN}-{YEAR}. {Note: this should be the most recently issued ROP, not a revision. If any revisions have been done since ROP issuance, do not include the "a, b, c" sequential number here.} 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-{SRN}-{YEAR} {Note: this should be the most recent version of the Source-Wide PTI. Include the latest sequential letter after the number if there was a revision.} is being reissued as Source-Wide PTI No. SWPTI######## v#.#.

{For a PTI that does not have an associated ROP revision application or an ROP revision application that does not have an associated PTI, enter NA in the appropriate column in the table below.}

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)

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 FGLANDFILL-XXX<34.

Default Values

The permittee must calculate the NMOC emission rate using either **Equation 1** (the equation provided in 40 CFR 60.764(a)(1)(i)) or **Equation 2** (the equation provided in 40 CFR 60.764(a)(1)(ii)). Both equations may be used if the actual year-to-year solid waste acceptance rate is known, as specified in **Equation 1** (40 CFR 60.764(a)(1)(i)), for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in **Equation 2** (the equation provided in 40 CFR 60.764(a)(1)(ii)), for part of the life of the landfill. The values to be used in both equations are 0.05 per year for k, 170 cubic meters per Mg for L_o, and 4,000 ppm by volume as hexane for the C_{NMOC}. For landfills located in geographical areas with a thirty-year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorological site, the k value to be used is 0.02 per year. **(40 CFR 60.764(a)(1))**

Equation 1

The following equation must be used if the actual year-to-year solid waste acceptance rate is known. **(40 CFR 60.764(a)(1)(i))**

$$M_{NMOC} = \sum_{i=1}^{n} 2\,kL_oM_i\left(e^{-kt_i}\right)(C_{NMOC})(3.6\,x\,10^{-9})$$

Where:

M_{NMOC} = Total NMOC emission rate from the landfill, 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 solid waste in the ith section, Mg

t_i = age of the i^{th} section, years

C_{NMOC} = concentration of NMOC, ppmv as hexane

3.6×10^{-9} = conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for Mi if documentation of the nature and amount of such wastes is maintained.

Equation 2

The following equation must be used if the actual year-to-year solid waste acceptance rate is unknown.
(40 CFR 60.764(a)(1)(ii))

$$M_{NMOC} = 2L_o R (e^{-kc} - e^{-kt}) (C_{NMOC}) (3.6 \times 10^{-9})$$

Where:

M_{NMOC} = mass emission rate of NMOC, Mg per year

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

R = average annual acceptance rate, Mg per year

k = methane generation rate constant, $year^{-1}$

t = age of landfill, years

C_{NMOC} = concentration of NMOC, ppmv as hexane

c = time since closure, years; for active landfill c = 0 and $e^{-kc} = 1$

3.6×10^{-9} = conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value of R, if documentation of the nature and amount of such wastes is maintained.

Tier 1

The permittee must calculate NMOC mass emission rate utilizing Equation 1 or 2 in **Appendix 7**, as applicable, and compare it to the standard of 34 Mg per year. **(40 CFR 60.764(a)(2))**

Tier 2

The permittee must recalculate the NMOC mass emission rate using the **Equation 1** or **Equation 2** in **Appendix 7** and using the average NMOC concentration from the collected samples (**Tier 2** testing in **Appendix 5**) instead of the default value in the equation provided in 40 CFR 60.764(a)(1). **(40 CFR 60.764(a)(3)(i))**

If the resulting **Tier 2** NMOC mass emission rate is less than 34 Mg per year, the permittee must submit a periodic estimate of NMOC emissions in an NMOC emission rate report as provided in 40 CFR 60.767(b)(1) and must recalculate the NMOC mass emission rate annually as required under 40 CFR 60.762(b). The site-specific NMOC concentration must be retested every 5 years. **(40 CFR 60.764(a)(3)(iii))**

If the NMOC mass emission rate as calculated using the Tier 2 site-specific NMOC concentration is equal to or greater than 34 Mg per year, then the permittee must either:

1. Comply with 40 CFR 60.767(c) (submit a gas collection and control system design plan prepared by a professional engineer within 1 year); **(40 CFR 60.764(a)(3)(iv)(A))** or
2. Determine the site-specific methane generation rate constant and recalculate the NMOC emission rate using the site-specific methane generation rate using the procedure specified in **Tier 3** (40 CFR 60.764(a)(4); **(40 CFR 60.764(a)(3)(iv)(B))** or
3. Conduct a surface emission monitoring demonstration using the Tier 4 procedures specified in 40 CFR 60.764(a)(6). **(40 CFR 60.764(a)(3)(iv)(C))**

Tier 3

If the NMOC mass emission rate is less than 34 Mg per year, then the permittee must submit a periodic emission rate report as provided in 40 CFR 60.767(b)(1) and must recalculate the NMOC mass emission rate annually, as provided in 40 CFR 60.767(b)(1) using **Equation 1** or **Equation 2**, and using the site-specific methane generation rate constant (**Tier 3**) and NMOC concentration (**Tier 2**) obtained in 40 CFR 60.764(a)(3). The calculation of the methane generation rate constant (**Tier 3**) is performed only once, and the value obtained from this test must be used in all subsequent annual NMOC emission rate calculations. **(40 CFR 60.764(a)(4)(ii))**

Calculating expected gas generation flow rates from the landfill

For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with 40 CFR 60.762(b)(2)(ii)(A)(*1*), either **Equation 3** or **Equation 4**, below, must be used. The k and L_o kinetic factors should be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42) or other site-specific values demonstrated to be appropriate and approved by the USEPA Administrator. If k has been determined as specified in 40 CFR 60.764(a)(4), the value of k determined from the test must be used. A value of no more than 15 years must 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 60.765(a)(1))**

If a 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, **Equation 3** or **Equation 4**. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected gas generation rate, so calculations using **Equation 3** or **Equation 4** or other methods must be used to predict the maximum expected gas generation rate over the intended period of use of the gas control system equipment. **(40 CFR 60.765(a)(1)(ii))**

Equation 3

For sites with unknown year-to-year solid waste acceptance rate:

$$Q_m = 2L_o R (e^{-kc} - e^{-kt})$$

Where:

Q_m = maximum expected gas generation flow rate, cubic meters per year

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

R = average annual acceptance rate, Mg per year

k = methane generation rate constant, $year^{-1}$

t = age of the landfill at equipment installation plus the time the owner or operator intends to use the gas mover equipment or active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation, years

c = time since closure, years (for an active landfill c = 0 and $e^{-kc} = 1$)

Equation 4

For sites with known year-to-year solid waste acceptance rate:

$$Q_m = \sum_{i=1}^{n} 2\,kL_oM_i\left(e^{-kt_i}\right)$$

Where,

Q_M = maximum expected gas generation flow rate, cubic meters per year

k = methane generation rate constant, $year^{-1}$

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

M_i = mass of solid waste in the ith section, Mg

t_i = age of the i^{th} section, years

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MiEnviro forms ROP Annual Compliance Certification and ROP Semi-Annual Compliance Certification 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.

B. Other Reporting

{CHOOSE ONE}

The permittee shall use the following approved formats and procedures for the reporting requirements referenced in {Enter emission unit/flexible group}. Alternative formats must be approved by the AQD District Supervisor.

{OR}

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.

Appendix 9.

An Odor Management Plan (OMP) may have been required at a facility with historic or current odor issues. Delete this Appendix 9 if an OMP was not required for this facility.