LANE REGIONAL AIR PROTECTION AGENCY (LRAPA)
TITLE V OPERATING PERMIT REVIEW REPORT

REVIEW REPORT

Lane County Public Works – Waste Management Division **Permit No. 204740**
Short Mountain Landfill
84777 Dillard Access Road
Eugene, Oregon 97405
Website:
https://www.lanecounty.org/government/county_departments/public_works/waste_management/garbage___recycling/short_mountain_landfill

Source Information:

Primary SIC	4953
Secondary SIC	--
Primary NAICS	562212
Secondary NAICS	--
Public Notice Category	III

Source Category (OAR 340-216-8010: Table 1: Part and Code)	C.8: Landfills with more than 200,000 tons of waste in place and calculated methane generation rate is greater than or equal to 664 metric tons per year which are subject to the requirements of OAR 340 division 239
Source Category: LRAPA 37 – Table 1:	C.4: All sources that request a PSEL equal to or greater than the SER for a regulated pollutant.

Compliance and Emissions Monitoring Requirements:

Unassigned Emissions	N
Emission Credits	N
Compliance Schedule	N
Source Test Date(s)	See Permit

COMS	N
CEMS	N
Ambient monitoring	N

Reporting Requirements

Annual Report (due date)	March 1
Emission fee report (due date)	March 1
SACC (due date)	August 31
Greenhouse Gas (due date)	March 31

Monthly Report (due dates)	N
Quarterly Report (due dates)	N
Excess Emissions Report	Immediately
Other Reports	GHG

Air Programs

NSPS (list subparts)	A, Cc, Cf, WWW, IIII
NESHAP (list subparts)	A, AAAA, ZZZZ, 40 CFR part 61, subpart M
CAM	N
Regional Haze (RH)	N
Synthetic Minor (SM)	N
SM-80	N
Title V	Y
Part 68 Risk Management	N
ACDP (SIP)	N

Major FHAP source	N
Federal major source	N
NA New Source Review (NSR)	Y
Prevention of Significant Deterioration (PSD)	N
Acid Rain	N
Clean Air Mercury Rule (CAMR)	N
TACT	Y
>20 Megawatt	N

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LIST OF ABBREVIATIONS THAT MAY BE USED IN THIS REVIEW REPORT

ACDP	Air Contaminant Discharge Permit
ACWM	Asbestos-containing waster material
AIE	Aggregate insignificant emissions
AQMA	Air Quality Management Area
ASTM	American Society of Testing and Materials
°C	Celsius
CAAA	Clean Air Act Amendments
C-ACDP	Construction Air Contaminant Discharge Permit
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring Systems
CFR	Code of Federal Regulations
CH_4	Methane
CIA	Categorical insignificant activity
CI ICE	Compression ignition internal combustion engine
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CPMS	Continuous Parameter Monitoring System
DEQ	Oregon Department of Environmental Quality
dscf	Dry standard cubic foot
EF	Emission Factors
EPA	US Environmental Protection Agency
EPUD	Emerald People's Utility District
EU	Emissions unit
°F	Fahrenheit
FCAA	Federal Clean Air Act
GCCS	Gas collection and control system
GHG	Greenhouse gas
gr/dscf	Grains per dry standard cubic foot
HAP	Hazardous Air Pollutant as defined by LRAPA title 44 Table 1
H_2S	Hydrogen sulfide
ID	Identification number
I&M	Inspection and Maintenance
kW	kiloWatt
lb/MMscf	Pounds per Million standard cubic feet
LFG	Landfill gas
LRAPA	Lane Regional Air Protection Agency
MACT	Maximum Achievable Control Technology
mg/l	Milligram per liters
MM	Million
MMcf	Million cubic feet
MSW	Municipal Solid Waste
NA	Not applicable
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMOC	Non-Methane Organic Compounds
NO_X	Nitrogen oxides
NSPS	New Source Performance Standards
O_2	Oxygen
OAR	Oregon Administrative Rules
ORS	Oregon Revised Statutes
O&M	Operation and Maintenance
Pb	Lead
PCD	Pollution control device
PIR	Paved Industrial Roads
PM	Particulate matter
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
ppm	Parts per million
PSEL	Plant Site Emission Limit
RMP	Risk management plans
scf	Standard cubic foot
scfm	Standard cubic foot per minute
SDS	Safety Data Sheet
SEM	Surface Emission Monitoring
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SSM	Startup, shutdown or malfunction
ST	Source test
TRS	Total reduced sulfur
UPR	Unpaved Roads
VE	Visible emissions
VHAP	Volatile Hazardous Air Pollutant
VMT	Vehicle mile traveled
VOC	Volatile organic compound
WIP	Waste-in-Place

INTRODUCTION

1. This is an existing facility applying for renewal of an existing Title V federal operating permit. Upon issuance, the renewed Title V federal operating permit will be valid for 5 years.
2. In accordance with OAR 340-218-0120(1)(f), this review report is intended to provide the legal and factual basis for the draft permit conditions. In most cases, the legal basis for a permit condition is included in the permit by citing the applicable regulation. In addition, the factual basis for the requirement may be the same as the legal basis. However, when the regulation is not specific and only provides general requirements, this review report is used to provide a more thorough explanation of the factual basis for the draft permit conditions.

FACILITY DESCRIPTION

3. Lane County Public Works – Waste Management Division: Short Mountain Landfill ("the facility" or "SML") operates a Municipal Solid Waste Landfill under the primary SIC code 4953 – Refuse System located at 84777 Dillard Access Road, Eugene. The facility started receiving waste in 1976. Major activities on the site include receipt and disposal of municipal solid waste such as, household waste, garbage, refuse, commercial solid waste, nonhazardous sludge, industrial solid waste and asbestos.
4. SML is located at the base of Short Mountain, which lays to the north of the facility and is generally a flat area. The facility is sited within the boundaries of Coast Fork Willamette River to the east, Camas Swale to the south, and Interstate 5 and Highway 99 to the west. The area near the facility is mostly used for agriculture with some rural residences located to the south.
5. SML is located outside of the Eugene/Springfield Air Quality Management Area. The facility is located in an area that has been designated as attainment/unclassified area for all criteria pollutants. The facility is located within 100 kilometers of two (2) Class I air quality protection areas: Diamond Peak Wilderness and Three Sisters Wilderness area.

GENERAL BACKGROUND INFORMATION

6. SML is a Title V major source as defined by 40 CFR 60.32c(c) and 40 CFR 60.752(c). SML accepted waste after November 8, 1987, has a design capacity that exceeds 2.5 megagram/million cubic meters and has estimated uncontrolled emissions greater than 50 megagrams per year (Mg/yr) of Non-Methane Organic Compounds (NMOC). The facility is not a federal major source for PSD purposes because the potential emissions for any individual regulated pollutant, excluding greenhouse gases (GHGs), are less than 250 tons per year (tpy) and the facility is not in a listed as source category per 40 CFR 51.166(b)(1)(iii).
7. SML has been receiving waste for Lane County since 1976. The facility site encompasses approximately 580 acres. The projected longevity of the landfill, assuming current projection of future waste volumes, extends to the year 2091. The approved design plan for SML has eleven phases. Phases 1-5 are no longer accepting waste and the final grade has been completed. Phase 6A started accepting waste on May16, 2022. SML does not accept hazardous waste but does maintain a separate disposal area for medical sharps and friable and non-friable asbestos located to the north of Phase 4 and 5. Major activities at the site include receipt and disposal of municipal solid waste and management of the landfill, which includes leachate management, landfill gas management, waste segregation and cover management. The facility does not treat landfill leachate onsite. The collected leachate is hauled via truck to the Glenwood Transfer facility where it is discharged to the Eugene-Springfield Water Pollution Control System.
8. SML has a landfill gas collection and control system (GCCS). The landfill gas contains approximately 50% methane. Theoretically, the GCCS collects 75% of the landfill gas by a system of vertical collectors and horizontal wells and by connections to the leachate collection risers. The captured gas is piped either to Emerald People's Utility District (EPUD) to combust to create electricity or to an enclosed flare that SML owns and operates. SML and EPUD have a contractual agreement for the ownership and operation of the GCCS installed at the facility. EPUD was issued a Standard Air Contamination Discharge Permit (ACDP) permit number 202536 by LRAPA for the four (4) RICE engines EPUD operates.

9. SML was issued its initial Title V in 2001 which was renewed on March 7, 2008 and September 20, 2012. The previous renewal expired on September 20, 2017. The facility supplied a timely renewal application on September 13, 2016 and an updated renewal application on May 10, 2022. Therefore, an application shield is in place and the 2012 permit will remain valid until LRAPA issues the new permit.
10. LRAPA has reviewed and issued the following permitting action to this facility since September 20, 2012:

Table 1: Permit Term Permitting Actions

Date Approved	Permit Action Type	Description
07/18/2016	Addendum No. 1 – Minor Modification Permit Amendment	Aligned regulatory language specified in 40 CFR 60.753(c), updating language in Condition 15.e.i.A and B and Table 3.
01/08/2019	Addendum No. 2 – Minor Modification Permit Amendment	Amended emission factors for Paved Industrial Roads (EU: PIR) and updated the PM and PM_{10} PSELs. SML also changed the Legal Name of the facility.
06/15/2022	Construction ACDP	Construction ACDP was issued to install an enclosed flare and emergency generator.
06/23/2022	Addendum No. 3 – Administrative Permit Amendment	Incorporated the enclosed flare and emergency generator regulatory language, emission factors, and PSELs increase into the permit.
07/20/2022	Section 502(b)(10) Change	Installation of an emergency generator for the sump pumps. The emergency generator is considered a categorically insignificant activity.

EMISSION UNIT AND POLLUTION CONTROL DEVICE IDENTIFICATION

11. The emissions units regulated by this permit are the following:

Table 2: Emission Units and Pollution Control Devices

Emission Unit Description	EU ID	Pollution Control Device (PCD) Description
Fugitive Landfill Gas	F-LFG	NA
Landfill Gas Collection and Control System	GCCS	Enclosed Flare and/or
		4 SI Engines owed/operated by EPUD (ACDP #202536)
Paved Industrial Roads	PIR	Water Application, Sweeping (if applicable)
Unpaved Roads	UPR	Water Application, Chemical Suppressant (if applicable), and/or Gravel Application
Aggregate Insignificant Emissions • Landfill Cell Activities	AIE	Reasonable precaution to prevent particulate matter from becoming airborne
Categorical Insignificant Activity • 2 Diesel-Fired Emergency Generators	CIA	NA

11.a. F-LFG – Fugitive Landfill Gas: Pollutants emitted as fugitives from the landfill are Methane (CH_4), Carbon Dioxide (CO_2), Non-Methane Organic Compounds (NMOC), Volatile Organic Compounds (VOCs), Hazardous Air Pollutants (HAPs), and greenhouse gases (GHGs). Approximately 75% of all landfill gas is captured and controlled. The remaining 25% is emitted to the atmosphere from the surface of the landfill as fugitives.

11.b. GCCS – Landfill Gas Collection and Control System: 75% of the LFG is collected/captured through a series of vertical collection wells, horizontal collectors, and surface collectors. All the collected LFG is sent to either the enclosed flare to be combusted or the gas is sent through a simple treatment system

(knockout box) and utilized by EPUD's generators to make electricity to put onto the power grid. SML owns and operates the enclosed flare and EPUD owns and operates the generators. Though most of the gas will be used by EPUD, if EPUD has an emergency shutdown or malfunction where they cannot use the gas, then SML will send the LFG to the enclosed flare.

11.c. UPR – Unpaved Roads: SML has unpaved roads that are used by vehicular traffic for delivery of waste as well as maintenance of the site and inspection of the collection system equipment. To reduce roadway fugitive particulate matter from becoming airborne, the unpaved roads will have water, chemical suppressant or gravel applied as necessary.

11.d. PIR – Paved Industrial Roads: SML has paved roads that are used by vehicular traffic for delivery of waste as well as maintenance of the site and inspection of the collection system equipment. To reduce roadway fugitive particulate matter from becoming airborne, the paved roads are cleaned by a street sweeper and will have water applied as necessary.

ALTERNATE OPERATING SCENARIOS

12. SML has two (2) operating scenarios:

12.a. First scenario is the contractual agreement between SML and Emerald People's Utility District (EPUD). The LFG collected from the landfill is sent via pipeline to EPUD to be utilized in the facility's generators to create electricity for the power grid.

12.b. Second scenario is if EPUD is not operating, SML pipes the collected LFG to the facility's enclosed flare to be combusted.

AGGREGATE INSIGNIFICANT EMISSIONS

13. EU: AIE – SML develops cells to receive waste and uses soil to cover areas of the landfill that are closed to receiving waste. This activity creates minimal PM, PM_{10}, and $PM_{2.5}$ emissions per year.

Pollutant	Activity	Emission (tpy)
PM/PM_{10}	Cell development and closure	0.66

CATEGORICALLY INSIGNIFICANT ACTIVITIES

14. The facility has the following categorically insignificant activities on site:

- Evaporative and tail pipe emissions from on-site motor vehicle operation
- Distillate oil, kerosene, and gasoline fuel burning equipment rated at less than or equal to 0.4 million Btu/hr
- Natural gas and propane burning equipment rated at less than or equal to 2.0 million Btu/hr
- Office activities
- Janitorial activities
- Personal care activities
- Grounds-keeping activities including, but not limited to building painting and road and parking lot maintenance
- Instrument calibration
- Maintenance and repair shop
- Air cooling or ventilating equipment not designed to remove air contaminants generated by or released from associated equipment
- Refrigeration systems with less than 50 pounds of charge of ozone depleting substances regulated under Title VI, including pressure tanks used in refrigeration systems but excluding any combustion equipment associated with such systems

- Bench scale laboratory equipment and laboratory equipment used exclusively for chemical and physical analysis, including associated vacuum producing devices but excluding research and development facilities
- Temporary construction activities
- Warehouse activities
- Accidental fires
- Air vents from air compressors
- Continuous emissions monitoring line vents
- Demineralized water tanks
- Instrument air dryers and distribution
- Process raw water filtration systems
- Fire suppression
- Routine maintenance, repair, and replacement such as anticipated activities most often associated with and performed during regularly scheduled equipment outages to maintain a plant and its equipment in good operating condition, including but not limited to steam cleaning, abrasive use, and woodworking
- Electric motors
- Storage tanks, reservoirs, transfer and lubricating equipment used for ASTM grade distillate or residual fuels, lubricants, and hydraulic fluids
- On-site storage tanks not subject to any New Source Performance Standards (NSPS), including underground storage tanks (UST), storing gasoline or diesel used exclusively for fueling of the facility's fleet of vehicles
- Natural gas, propane, and liquefied petroleum gas (LPG) storage tanks and transfer equipment
- Storm water settling basins
- Fire suppression and training
- Paved roads and paved parking lots within an urban growth boundary, including:
- Hazardous air pollutant emissions of fugitive dust from paved and unpaved roads except for those sources that have processes or activities that contribute to the deposition and entrainment of hazardous air pollutants from surface soils
- Health, safety, and emergency response activities
- Emergency generators and pumps used only during loss of primary equipment or utility service, including:

  - EU: CIA – SML has two (2) Caterpillar diesel-fired emergency generators. One is used to start the enclosed flare and the other to continue to supply power to the sump pumps that collects the leachate. The emergency generators are only used when there is a power outage.

- Non-contact steam vents and leaks and safety and relief valves for boiler steam distribution systems
- Non-contact steam condensate flash tanks
- Non-contact steam vents on condensate receivers, deaerators and similar equipment
- Boiler blowdown tanks
- Industrial cooling towers that do not use chromium-based water treatment chemicals, including:
- Ash piles maintained in a wetted condition and associated handling systems and activities, including:
- Oil/water separators in effluent treatment systems

EMISSION LIMITS AND STANDARDS, TESTING, MONITORING, AND RECORDKEEPING

15. Section 70.6(a)(3) of the federal Title V permit rules requires all monitoring and analysis procedures or test methods required under applicable requirements be contained in Title V permits. In addition, where the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the facility's compliance with the permit.

16. The Title V permit does include monitoring for all requirements that apply to significant emissions units in addition to the testing requirements in the permit. Periodic visible emissions observations are required for all particulate emissions sources. In addition, the permit includes monitoring of operating parameters for the processes and pollution control devices. It is assumed that as long as these processes and controls are properly operated, the emissions levels will be below the emissions limits specified in the permit.

17. **EU: F-LFG – Fugitive Landfill Gas:**

17.a. EU: F-LFG is subject to 40 CFR part 60 subpart Cf – Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills. See the Federal Requirements section for more information.

17.b. EU: F-LFG is subject to 40 CFR part 63 subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills. See the Federal Requirements section for more information.

17.c. EU: F-LFG is subject to OAR chapter 340 division 239 – Landfill Gas Emissions. See Oregon Administrative Rules chapter 340 division 239 for more information. Compliance is demonstrated through surface emission monitoring.

17.d. EU: F-LFG is subject to the visible emission limitations under LRAPA 48-015(1). The fugitive emissions cannot leave the plant site boundaries for more than 18 seconds in a six-minute period. Compliance is demonstrated by monthly 30-minute visually surveys with maintenance of records for at least five (5) years.

18. **EU: GCCS –Gas Collection and Control System:**

18.a. EU: GCCS is subject to 40 CFR part 60 subpart Cf – Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills. See the Federal Requirements section of the permit for all requirements.

18.b. EU: GCCS is subject to 40 CFR part 63 subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills. See the Federal Requirements section of the permit for all requirements.

18.c. EU: GCCS is subject to OAR 340-239 – Landfill Gas Emissions. See State OAR section of the permit for all requirements.

18.d. EU: GCCS – Enclosed Flare is subject to the visible emission limitations under LRAPA 32-010(3). This emission unit may not have visible emissions equal to or greater than 20% opacity for a period or periods aggregating more than three (3) minutes in any one (1) hour. Compliance is demonstrated through monitoring of the enclosed flare visible emissions to be completed at least once quarterly.

18.e. EU: GCCS – Enclosed Flare is subject to the particulate matter emission limitations under LRAPA 32-015(2)(c). For sources installed, constructed or modified after April 16, 2015, the particulate matter emission limit is 0.10 grains per dry standard cubic foot. Compliance is demonstrated through visible emissions to be completed at least once quarterly.

18.f. EU: GCCS – Enclosed Flare is subject to minimum operating temperature based on a 3-hour block average under LRAPA 32-007(b). Compliance is demonstrated through recordkeeping.

18.g. EU: GCCS – Enclosed Flare is subject to verifying of emission factors for PM, NO_X, CO, VOC and TRS and reduction/destruction efficiency rates for Methane and NMOC. Compliance is demonstrated through performance testing at scheduled intervals.

18.h. EU: GCCS – Enclosed Flare is subject to having an Operation and Maintenance Plan (O&M Plan) for the operating parameters and maintenance of the enclosed flare. Compliance is demonstrated through preparing and maintaining a written Operation and Maintenance Plan (O&M Plan).

19. **EU: UPR and PIR:**

19.a. EUs: UPR and PIR are subject to taking reasonable precautions in preventing particulate matter from becoming airborne.

19.b. EUs: UPR and PIR are subject to visible emission limitations under LRAPA 34-015(2) and (3). The emissions units may not have visible emissions that leave the plant site boundary for more than 18

seconds in a six (6) minute period. Compliance is demonstrated through monitoring of the plant site visible emissions that is completed at least monthly.

Asbestos Disposal Area:

20. Asbestos is disposed in a designated area of the landfill. The work practices for disposing of friable and non-friable asbestos-containing waste materials (ACWM) must meet the requirements under LRAPA 43-015-19 and 40-015-20, and 40 CFR part 61 subpart M. In May 1997, SML requested and received, in writing from LRAPA, approval to use alternative disposal methods related to the requirement that the asbestos waste be covered by soil daily. The facility also received written approval from ODEQ's solid waste manager on August 15, 1997 for the same alternative cover request. The alternative methods were reviewed by LRAPA and the SML in 2011 and were re-approved by LRAPA on June 27, 2012.

    The draft permit specifies the non-alternative methods required by LRAPA title 43. By filling voids with new deposits of waste, rather than cover material (sand), the use of these alternative methods has reduced by many hundreds of cubic yards the amount of landfill air space occupied by permanent cover material.

21. LRAPA has reviewed the alternative methods for cover material during this current renewal and has granted SML approval to continue using the alternative cover methods. The conditions for the alternative method are located in the permit and are summarized as such:

    21.a. SML has approval to use alternative cover for the active asbestos containing waste materials (ACWM) disposal area at end of each day that new ACWM is disposed of with a tarp that is identical to, or the equivalent of, materials used to cover active areas of the general landfill.

    21.b. The ACWM disposal area will be inspected each day the ACWM disposal area is in operation and documented in daily inspection log and available to LRAPA upon request. The daily inspection log must include the following: Date and time of the inspection, name of employee conducting the inspection and inspection results.

    21.c. Cover the ACWM disposal area with a minimum of 12 inches of sand or soil as needed, but in no case may the time period between the alternative covering and the installation of the permanent covering exceed six (6) months and records must be maintained of the type of alternate covering use and initial date of use for a period of one (1) year for LRAPA inspection.

EMISSION LIMITS FOR INSIGNIFICANT ACTIVITIES

22. As identified earlier in this Review Report, this facility has insignificant emissions units (IEUs) that include categorically insignificant activities, as defined in LRAPA title 12 and/or OAR 340-200-0020. For the most part, the standards that apply to IEUs are for opacity and particulate matter. 40 CFR 70.6(a)(3) of the federal Title V permit rules, requires all monitoring and analysis procedures or test methods required under applicable requirements be contained in Title V permits. In addition, where the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the facility's compliance with the permit. However, the requirements to include in a permit testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance does not require the permit to impose the same level of rigor with respect to all emissions units and applicable requirement situations. It does not require extensive testing or monitoring to assure compliance with the applicable requirements for emissions units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions. Where compliance with the underlying applicable requirement for an insignificant emission unit is not threatened by a lack of a regular program of monitoring and where periodic testing or monitoring is not otherwise required by the applicable requirement, then in this instance the status quo (i.e., no monitoring) will meet Section 70.6(a)(3). For this reason, this permit includes limited requirements for categorically insignificant activities.

Categorically Insignificant Activity – 2 Diesel-Fired Emergency Generators

23. The facility has two (2) Caterpillar diesel-fired compression ignition internal combustion engines (CI ICE) emergency generators which commenced construction after July 11, 2005 and which are subject to the

requirements under 40 CFR Part 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. See the Federal Requirements section of this review report for more information.

FEDERAL REQUIREMENTS

New Source Performance Standards (NSPS)

24. NSPS: SML became subject to Title 40 CFR part 60 subpart Cc – *Emissions Guidelines and Compliance Times for Municipal Solid Waste Landfills* (§§60.30c-60.63c) on May 30, 1991. Title 40 CFR part 60 subpart Cc refers to meeting conditions provided in Title 40 CFR part WWW – *Standards of Performance for Municipal Solid Waste Landfills* (§§60.750-60.759), including the general performance requirements of Title 40 CFR part 60 subpart A. The facility complied to the applicable requirements of Title 40 CFR part 60 subpart WWW. Title 40 CFR part 60 subpart WWW was amended on March 26, 2020, and per provision 40 CFR 60.750(d)(1), SML is subject to the requirements to Title 40 CFR part 60 subpart Cf – *Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills* (§§60.30f-60.41f). In accordance with 40 CFR 60.752(b) (previous applicable requirement) and 40 CFR 60.33f(b) (current applicable requirement) of this rule, the permittee must design, install and maintain a landfill gas collection and control system (GCCS). The GCCS was completed 1991 and remains operational. SML must follow all requirements of Title 40 CFR part 60 subpart Cf.

    The conditions below were removed from this renewal, though they were in the Construction ACDP issued on June 15, 2022, SML has complied with the regulations noted below. SML was subject to 40 CFR part 60 subpart Cc because the MSWL commenced construction before May 30, 1991, had a design capacity greater than or equal to 2.5 million megagrams and 2.5 million cubic meters, started accepting waste since November 8, 1987 and has an uncontrolled NMOC emission rate of 50 megagrams per year or more. To comply with of 40 CFR part 60 subpart Cc, the facility had to install a GCCS that met the standards in of 40 CFR part 60 subpart WWW. SML met the requirements in subpart WWW by installing a GCCS, minimizing fugitive emissions from the landfill and reducing collected NMOC emissions by the mandatory 98 percent. SML became subject to 40 CFR part 60 subpart Cf because subpart WWW states that a facility must comply with its conditions until the MSWL becomes subject to more stringent requirements. Subpart Cf is more stringent than subpart WWW; therefore, SML is now required to follow the requirements of 40 CFR part 60 subpart Cf. SML has complied with the requirements of 40 CFR part 60 subpart Cf and will continue to until a more stringent regulation is promulgated.

    - Applicable Requirement: The permittee must install a collection and control system meeting the conditions of 40 CFR part 60, subpart WWW at the Municipal Solid Waste Landfill (MSW landfill) meeting the conditions in 40 CFR 60.33c(a). [40 CFR 60.33c(b) and ACDP 06/15/22 Condition 10]
    - Applicable Requirement: The permittee must continue to comply with 40 CFR Part 60, Subpart WWW until the subpart WWW becomes subject to the more stringent requirements in an approved and effective state or federal plan that implements 40 CFR part 60, subpart Cf. [40 CFR 60.750(d)(1) and ACDP 06/15/22 Condition 11]
    - Applicable Requirement: All landfills described in 40 CFR 63.1935 must meet the requirements of 40 CFR part 63 subpart AAAA. A landfill may choose to meet the requirements of 40 CFR part 63 subpart AAAA rather that the requirements identified in 40 CFR 63.1930(a) at any time before September 27, 2021. The requirements of 40 CFR part 63 subpart AAAA apply at all times, including during periods of Startup Shutdown and Malfunction (SSM), and the SSM requirements of the General Provisions of 40 CFR part 63 subpart AAAA do not apply. [40 CFR 63.1930(b) and LRAPA 44-150(5)(iii)]
    - Applicable Requirement: The permittee must collect and control MSW landfill emissions from a MSW landfill having a design capacity greater than or equal to 2.5 million megagrams by mass and 2.5 million cubic meters by volume that meet the following conditions: [40 CFR 60.33f(a), OAR 340-236-0500(7) and ACDP 06/15/22 Condition 12].

- The landfill has accepted waste at any time since November 8, 1987, or has additional design capacity available for future waste deposition. [40 CFR 60.33f(a)(1), 40 CFR 63.1935(a), OAR 340-236-0500(7)(a), LRAPA 44-150(5)(iii) and ACDP 06/15/22 Condition 12.a]
- The landfill commenced construction, reconstruction, or modification on or before July 17, 2014. [60.33f(a)(2), OAR 340-236-0500(7)(b), LRAPA 44-150(5)(iii) and ACDP 06/15/22 Condition 12.b]
- The landfill has an NMOC emission rate greater than or equal to 34 megagrams per year or Tier 4 surface emission monitoring shows a surface emission concentration of 500 parts per million methane. [40 CFR 60.33f(a)(2), OAR 340-236-0500(7)(c), LRAPA 44-150(5)(iii) and ACDP 06/15/22 Condition 12.c]

24.a. SML has a design capacity over 2.5 million cubic meters or cubic meters and fugitive NMOC emissions over 34 megagrams per 40 CFR 60.33f(e)(2), but prior to March 26, 2020, SML was applicable to the 50 megagrams per 60 CFR 60.752(b)(1). The facility was required to install a landfill gas collection and control system (GCCS). SML complied with this requirement in 1991 because per Title 40 CFR part 60 subpart WWW, the thresholds to install a GCCS were met and therefore, required.

24.b. SML complies with the Annual Reporting Requirements of 40 CFR 63.38f(h) by complying with 40 CFR 63.1981(h) Semi-Annual Reporting Requirements.

Table 3: Applicability to 40 CFR part 60, subpart Cf

40 CFR part 60, subpart Cf citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.30f	Scope and delegated authorities	-	Informational	NA
60.31f	Designated facilities	Yes	The MSWL meets the criteria of this subpart.	NA
60.32f	Compliance times	Yes	The MSWL meets the criteria of this subpart.	NA
60.33f	Emission Guidelines for municipal solid waste landfill emissions	Yes	Subsection (d) is not applicable to the MSWL GCCS.	31 & 33
60. 34f	Operational standards for collection and control systems	Yes	This section is applicable to the MSWL GCCS.	35
60. 35f	Test methods and procedures	Yes	This section is applicable to the MSWL GCCS.	32 & 51
60.36f	Compliance provisions	Yes	This section is applicable to the MSWL GCCS.	39 – 43
60.37f	Monitoring of operations	Yes	Subsection (a), (b), (e), (f) and (h) are applicable to the MSWL GCCS	45 – 48
60.38f	Reporting guidelines	Yes	This section is applicable to the MSWL except subsection (b), (l) and (m).	64 – 66, 67.a – 67.g & 68 –70
60.39f	Recordkeeping guidelines	Yes	This section is applicable to the MSWL, except Subsections (f) and (j).	53 – 55, 58 – 60, 62 & 63

40 CFR part 60, subpart Cf citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.40f	Specifications for active collection systems	Yes	This section is applicable to the MSWL.	36 – 38
60.41f	Definitions	Yes	This section is applicable to the MSWL.	NA

25. NSPS: Title 40 CFR part 60 subpart IIII (§§60.4200-60.4219) – *New Source Performance Standard for Stationary Compression Ignition Internal Combustion Engines*. In accordance with 40 CFR 60.4205(b), SML must meet the emissions standards of this subpart for the CI engine. Per 40 CFR 60.4202(a)(2) the CI engine must meet the emissions standards for Tier 3 nonroad engines specified in 40 CFR part 1039 appendix I in Table 3 and the smoke standards in 40 CFR part 1039.105(b).

    Emergency stationary ICE may be operated for maintenance checks and readiness testing for a maximum of 100 hours per calendar year. There is no time limit on the use of emergency stationary ICE in emergency situations.

Table 4: Applicability to 40 CFR part 60, subpart IIII: Categorically Insignificant Activity – 2 Diesel-Fired Emergency Generators

40 CFR Part 60, Subpart IIII Citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.4200	Subpart applicability	Yes	None.	NA
60.4201	Emission standards	No	For non-emergency engines.	NA
60.4202	Subpart applicability	Yes	2007 model year and later emergency stationary CI ICE with a max engine power less than or equal to 3,000 HP and a displacement of less than 10 liters per cylinder are subject to the emission standards in 40 CFR 89.112 and 40 CFR 89.113	124.a
60.4203	Emission standards	No	Manufacturer requirements.	NA
60.4204	Emission standards	No	Emission standards for non-emergency engines.	NA
60.4205	Emission standards	Yes	Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards in 40 CFR 89.112 and 40 CFR 89.113.	124
60.4206	Emission standards	Yes	The emission standards are applicable for the life of the engine.	NA
60.4207	Fuel requirements	Yes	Must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.	124.a.ii
60.4208	Requirements	No	Limitations on installation of previous model years engines	NA
60.4209	Monitoring requirements	No	Installation of a non-resettable hour meter.	NA
60.4210	Compliance requirements	No	Manufacturer compliance requirements.	NA

40 CFR Part 60, Subpart IIII Citation	Description	Applicable to source (Yes/No)	Comments	Permit Condition
60.4211	Compliance requirements	Yes	Recordkeeping requirements.	125 – 128
60.4212	Testing requirements	No	No testing requirements applicable to emergency engines.	NA
60.4213	Testing Methods	No	No testing requirements applicable to emergency engines.	NA
60.4214	Notification, reporting, and recordkeeping requirements	Yes	Recordkeeping of operation of the engine in emergency and non-emergency service through a non-resettable hour meter.	129
60.4215	Special requirements.	No	Engine is not located in the listed geographic areas.	NA
60.4216	Special requirements	No	Engine is not located in the listed geographic areas.	NA
60.4217	Special requirements	No	Engine does not use special fuels.	NA
60.4218	General provisions	Yes	None.	NA
60.4219	Definitions	Yes	None.	NA

National Emission Standards for Hazardous Air Pollutants (NESHAP)

26. NESHAP/MACT: Title 40 CFR part 63 subpart AAAA (§§63.1930-63.1990) – *National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills* includes the general performance requirements of Title 40 CFR part 63 subpart A. In accordance with 40 CFR 63.1959(b)(2) of this rule, the permittee must design, install and maintain a landfill gas collection and control system (GCCS), which was performed under NSPS 40 CFR part 60, Subpart WWW and therefore, SML has complied with Title 40 CFR part 63 subpart AAAA.

    26.a. Prior to September 28, 2021, SML was subject to the development and retention of a startup, shutdown, and malfunction plan (SSM Plan). The SSM Plan must demonstrate compliance with the operating conditions by parametric monitoring results that are within the specified ranges. The facility complied with this standard.

Table 5: Applicability to 40 CFR part 63, subpart AAAA

40 CFR part 63, subpart AAAA citation	Description	Applicable to source (Y/N)	Comments	Permit Condition
63.1930	Purpose of subpart	-	Informational	NA
63.1935	Subpart applicability	Y	The MSWL meets the criteria of this subpart.	NA
63.1940	Affected source	Y	Subsection (b) is not applicable to the MSWL.	NA
63.1945	Compliance dates	Y	Subsection (a) is not applicable to the MSWL.	NA
63.1947	Compliance dates for operation of bioreactor	N	SML does not operate a bioreactor therefore, this section does not apply.	NA
63.1950	No longer required to comply	Y	This Section applies to the MSWL.	NA

40 CFR part 63, subpart AAAA citation	Description	Applicable to source (Y/N)	Comments	Permit Condition
63.1952	No longer required to comply if operating a bioreactor	N	SML does not operate a bioreactor therefore, this section does not apply.	NA
63.1955	Standards: Requirements to meet	Y	Subsection (b) is not applicable to the MSWL GCCS.	34
63.1657	Requirement for GCCS installation and removal	Y	This section is applicable to the MSWL for operation of the GCCS and when the GCCS can be removed.	33
63.1958	Operational standards for GCCS	Y	This section is applicable to the MSWL and sets operational standards for the GCCS.	35
63.1959	NMOC calculations procedures	Y	Subsection (e) is not applicable to the MSWL.	31, 32, 51 & 52
63.1960	Compliance provisions	Y	This section is applicable to the operation of the MSWL GCCS.	39 – 43
63.1961	Monitoring of operation	Y	Subsections (c), (d), (e), and (g) are not applicable.	45 – 48
63.1962	Specifications for active collection systems	Y	This section is applicable to the MSWL GCCS.	36 – 38
63.1964	How is compliance determined	Y	This section applies to the MSWL GCCS, but subsection (a) is no longer applicable.	44
63.1965	What is a deviation	Y	Subsection (c) does not apply to the enclosed flare.	50
63.1975	How to calculate the 3-hour block average used to demonstrate compliance	Y	This section is applicable to the enclosed flare.	49
63.1981	What reports must be submitted	Y	This section is applicable to the MSWL GCCS.	64 – 69 & 72 – 75
63.1982	What records and reports must be submitted for bioreactors	N	SML does not operate a bioreactor therefore, this section does not apply.	NA
63.1983	What records must be kept	Y	This section is applicable MSWL GCCS. Subsections (f) does not apply to the MSWL.	53 – 61
63.1985	Who enforces this subpart	Y	This section is applicable to the MSWL.	NA
63.1990	What definitions apply	Y	This section is applicable to the MSWL.	NA

27. NESHAP/MACT: Title 40 CFR part 63 subpart ZZZZ (§§63.6580-63.6675) – *National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines* includes the general

performance requirements of Title 40 CFR part 63 subpart A. In accordance with 40 CFR 63.6590(c) of this rule, the permittee is required to follow the requirements of 40 CFR part 60 subpart IIII.

27.a. The facility has two (2) Caterpillar diesel-fired emergency generators (EU: CIA) installed after June 12, 2006, which are subject to the requirements under 40 CFR Part 63 Subpart ZZZZ. These emergency generators are considered to be new emission units at an area source of FHAPs. Under 40 CFR 63.6590(c)(1), a new or reconstructed stationary RICE located at an area source of FHAP emissions must meet the requirements of 40 CFR 63 subpart ZZZZ by meeting the requirements of 40 CFR 60 subpart IIII. No further requirements apply for such engines under this part.

Table 6: Applicability to 40 CFR part 63, subpart ZZZZ

40 CFR Part 63, Subpart ZZZZ Citation	Description	Applicable to Source (Y/N)	Comments	Permit Condition
63.6580	Purpose	Y	None	NA
63.6585	Applicability	Y	None	NA
63.6590	Applicability	Y	Must comply with 40 CFR 60 Subpart IIII. No other requirements apply.	NA
63.6600	Emission limitations	N	None	NA
63.6601	Emission limitations	N	None	NA
63.6602	Emission limitations	N	None	NA
63.6603	Emission limitations	N	None	NA
63.6604	Fuel requirements	N	None	NA
63.6605	General requirements	N	None	NA
63.6610	Initial compliance	N	None	NA
63.6611	Initial performance test	N	None	NA
63.6612	Initial performance test	N	None	NA
63.6615	Subsequent performance tests	N	None	NA
63.6620	Performance test procedures	N	None	NA
63.6625	Monitoring and maintenance requirements	N	None	NA
63.6630	Initial compliance	N	None	NA
63.6635	Continuous compliance	N	None	NA
63.6640	Continuous compliance	N	None	NA
63.6645	Notifications	N	None	NA
63.6650	Reports	N	None	NA
63.6655	Records	N	None	NA
63.6660	Record retention	N	None	NA
63.6665	General provisions	N	None	NA
63.6670	Implementation and enforcement	N	None	NA
63.6675	Definitions	N	None	NA

Compliance Assurance Monitoring

28. CAM: Title 40, Part 64 of the Code of Federal Regulations (CFR) contains Compliance Assurance Monitoring (CAM) requirements. These regulations are also codified in LRAPA 35-0200 through 35-0280. CAM requirements apply to any Pollutant Specific Emissions Unit (PSEU) at a Part 70 source that meets the following criteria:
    - 28.a. The unit is subject to an emission limitation or standard for a regulated air pollutant;
    - 28.b. The unit uses a control device to achieve compliance with that emission limitation or standard;
    - 28.c. The unit, by itself, has potential pre-control emissions of the regulated air pollutant that would make it a major source (i.e. greater than 100 tons per year for criteria pollutants; greater than 10 tons per year for individual Federal HAPs); and
    - 28.d. The exemptions in 40 CFR §64.2(b) and LRAPA 35-0200(2) do not apply. The exemptions include:
        - 28.d.i. Emission limitations or standards proposed by US EPA after November 15, 1990 under section 111 (NSPS) or section 112 (NESHAPs);
        - 28.d.ii. Stratospheric ozone protection requirements under Title VI;
        - 28.d.iii. Acid Rain Program requirements;
        - 28.d.iv. Emission limitations or standards or other applicable requirements that apply solely under an emissions trading program approved or promulgated by US EPA;
        - 28.d.v. An emissions cap that meets the requirements in 40 CFR 70.4(b)(12);
        - 28.d.vi. Emission limitations or standards for which a Part 70 permit specifies a continuous compliance demonstration method, as defined in 40 CFR 64.1 and LRAPA title 12; and
        - 28.d.vii. Municipally-owned backup utility emission units meeting the requirements under 40 CFR 64.2(b)(2).

Table 7: Applicability to 40 CFR part 64: Compliance Assurance Monitoring

Emission Unit	Regulated Pollutant	Uses a Control Device for a Regulated Pollutant	Uncontrolled Potential Emissions Exceed Major Source Threshold	Is there an Emission Limitation or Standard for this Pollutant	Subject to CAM for the Pollutant	Monitoring Frequency
F-LFG	PM	No	No	No	No	--
F-LFG	PM_{10}	No	No	No	No	--
F-LFG	$PM_{2.5}$	No	No	No	No	--
F-LFG	NO_x	No	No	No	No	--
F-LFG	CO	No	No	No	No	--
F-LFG	SO_2	No	No	No	No	--
F-LFG	VOC	No	No	No	No	--
F-LFG	HAPs	No	No	No	No	--
F-LFG	NMOC	No	Yes	No	No	--
GCCS	PM	No	No	No	No	--
GCCS	PM_{10}	No	No	No	No	--
GCCS	$PM_{2.5}$	No	No	No	No	--
GCCS	NO_x	No	No	No	No	--
GCCS	CO	No	No	No	No	--
GCCS	SO_2	No	No	No	No	--
GCCS	VOC	No	No	No	No	--
GCCS	H_2S	No	No	No	No	--
GCCS	HAPs	No	No	No	No	--
GCCS	NMOC	Yes	Yes	Yes	No (MACT)	--

Emission Unit	Regulated Pollutant	Uses a Control Device for a Regulated Pollutant	Uncontrolled Potential Emissions Exceed Major Source Threshold	Is there an Emission Limitation or Standard for this Pollutant	Subject to CAM for the Pollutant	Monitoring Frequency
PIR	PM	No	No	No	No	--
PIR	PM_{10}	No	No	No	No	--
PIR	$PM_{2.5}$	No	No	No	No	--
UPR	PM	No	No	No	No	--
UPR	PM_{10}	No	No	No	No	--
UPR	$PM_{2.5}$	No	No	No	No	--

Chemical Accident Prevention Provisions

29. Title 40, Part 68 of the Code of Federal Regulations (CFR) list regulated substances and thresholds, the petition process for adding or deleting substances to the list of regulated substances, the requirements of the owner or operator of stationary source concerning the prevention of accidental release, and the State accidental release prevention programs approved under section 112(r). SML has certified that the facility is not subject to 40 CFR part 68, which requires a risk management plan for toxic and flammable substances releases.

Stratospheric Ozone-Depleting Substances

30. The facility does not manufacture, sell, distribute, or use in the manufacturing of a product any stratospheric ozone-depleting substances and the EPA 1990 Clean Air Act as amended, Sections 601-618, do not apply to the facility except that air conditioning units and fire extinguishers containing Class I or Class II substances must be serviced by certified repairmen to ensure that the substances are recycled or destroyed appropriately.

PLANT SITE EMISSION LIMITS

31. Provided below is a summary of the baseline emissions rate, netting basis, plant site emission limit, and emissions capacity.

Table 8: Baseline, Netting Basis, Plant Site Emissions Limits and Potential to Emit

Pollutant	Baseline (tpy)	Netting Basis		Plant Site Emission Limit (PSEL)			PTE (tpy)
		Previous (tpy)	Proposed (tpy)	Previous PSEL (tpy) [(1)]	Proposed PSEL (tpy) [(2)]	PSEL Increase (tpy)	
PM	9.9	10	10	24	24	0	22.06
PM_{10}	2.1	2	2	14	14	0	10.15
$PM_{2.5}$	NA	0.30	0.30	9	9	0	6.04
CO	0.02	0	0	99	99	0	51.66
NO_X	0	0	0	39	39	0	16.52
SO_2	0	0	0	39	39	0	8.80
VOC	0	0	0	39	39	0	19.36
H_2S	0	0	0	9	9	0	1.15
NMOC	0.01	0.1	0.1	49	49	0	48.88
GHG	139,398	139,398	139,398	293,678	261,056	0	261,056

[(1)] Previous PSEL is based on Addendum 3 PSELs.
[(2)] The PSEL is based on the 2032 LandGEM LFG Projection rate.

31.a. The baseline emissions rates for PM, PM_{10}, CO and NMOC were determined in previous permitting actions and there are no changes. A baseline emission rate is not required for $PM_{2.5}$ in accordance with the "baseline emission rate" in LRAPA subsection 42-0048(3).

31.b. There are no changes to the netting basis for the pollutants with newly established PSELs (NO_X and SO_2). Increases to the netting basis are approved through Federal Major NSR or Type A State NSR, under LRAPA title 38. The pollutants with newly established PSELs are below the SER and therefore, the action did not trigger a Federal Major NSR or Type A State NSR action, so the netting basis for each of these pollutants remains zero (0). [LRAPA 42-0046(3)(e)]

31.c. The PSEL for NO_X and SO_2 were added to the table for the proposed combustion emissions resulting from the enclosed flare, all other emissions will remain at the current permit limits.

31.d. The greenhouse gases (GHGs) baseline period was based on 2010 GHGs emissions for the facility. The baseline and netting basis for GHGs in 2012 was 139,398 tons per year. The 2012 GHGs annual emission is the baseline plus the generic PSEL of 74,000 tons of CO_2e per year (139,398 + 74,000 = 213,398 tons per year) was used in the 2012 Title V permit. The GHG emissions during the renewal is based on 25% of the LFG are fugitive and 75% are collected and controlled. The collected gas is controlled by an enclosed flare. Using LandGEM LFG projections for 2032, the GHG emissions from fugitive LFG is 205,837 tons per year and the GHG emissions from the LFG after control through the enclosed flare are 55,220 tons per year for a total GHG emissions of 261,056 tons per year.

UNASSIGNED EMISSIONS AND EMISSION REDUCTION CREDITS

32. The facility has no unassigned emissions. The facility does not have any emission reduction credits at this time.

SIGNIFICANT EMISSION RATES

33. The proposed PSEL are equal to the previously established PSEL. There are no increases in the PSEL being requested with this Title V permit action. An analysis of the proposed PSEL increases over the Netting Basis are shown in the following table:

Table 9: Significant Emission Rate

Pollutant	Proposed PSEL (tpy)	PSEL Increase Over Netting Basis (tpy)	PSEL Increase Due to Utilizing Existing Baseline Period Capacity (tpy)	PSEL Increase Due to Modification (tpy)	SER (tpy)
PM	24	14	0	0	25
PM_{10}	14	12	0	0	15
$PM_{2.5}$	9	8.7	0	0	9
CO	99	99	0	0	100
NO_X	39	39	0	0	40
SO_2	39	39	0	0	40
VOC	39	39	0	0	40
H_2S	9	9	0	0	10
TRS	9	9	0	0	10
NMOC	49	48.9	0	0	50 (1)
GHG (CO_2e)	261,056	121,658	0	0	75,000

(1) NMOC is listed on Table 2 of LRAPA title 12 for "Municipal Solid Waste Landfill Emissions (measured as nonmethane organic compounds)".

34. There has been no physical modification at the facility that would have required a New Source Review or have met the LRAPA definition of a major modification sine the baseline period.

HAZARDOUS AIR POLLUTANTS

35. The following is the potential to emit (tons per year) of the facility for hazardous air pollutants listed in Section 112(b) of the 1990 Clean Air Act Amendments (CAAA). The emissions totals below reflect the maximum HAP emissions from the facility. The table demonstrates that the facility emits less than ten (10) tons per year of any single HAP and less than 25 tons per year of total HAPs. SML is considered an area source of HAP and is subject to 40 CFR part 63 subpart AAAA.

Table 10: Hazardous Air Pollutants

Hazardous Air Pollutants	Potential Emissions (tons/yr)
1,1,1-Trichloroethane (methyl chloroform)	0.0629
1,1,2,2-Tetrachloroethane	0.1829
1,1-Dichloroethane (ethylidene dichloride)	0.2283
1,1-Dichloroethene (vinylidene chloride)	0.0190
1,2-Dichloroethane (ethylene dichloride)	0.0398
1,2 -Dichloropropane (propylene dichloride)	0.0200
Acrylonitrile	0.3298
Benzene	0.1176
Carbon disulfide	0.0434
Carbon tetrachloride	0.0006
Carbonyl sulfide	0.0289
Chlorobenzene	0.0276
Chloroethane (ethyl chloride)	0.0792
Chloroform	0.0035
Chloromethane (methyl chloride)	0.0600
Dichlorobenzene[1]	0.0303
Dichloromethane (methylene chloride)	1.1925
Ethylbenzene	0.4805
Ethylene dibromide	0.0002
Hexane	0.5559
Mercury	0.0001
Methyl isobutyl ketone	0.1839
Perchloroethylene (tetrachloroethylene)	0.6073
Trichloroethylene (trichloroethene)	0.3638
Toluene	2.8537
Vinyl chloride	0.4504
Xylenes	1.2611
Total Federal HAP	9.22

CLEANER AIR OREGON

Under the Cleaner Air Oregon program, only existing sources that have been notified by LRAPA and new sources are required to perform risk assessments. This source has not been notified by LRAPA and is therefore, not yet required to perform a risk assessment or report annual emissions of toxic air contaminants. LRAPA required reporting of approximately 600 toxic air contaminants in 2016 and regulates approximately 260 toxic air contaminants that have Risk Based Concentrations established in rule. All Federal HAPs (FHAPs) are on the list of approximately 600 toxic air contaminants. The FHAPs and toxic air contaminants listed below are based upon source testing and standard emission factors for the types of emission units at this facility. After the source is notified by LRAPA, they must update their inventory and perform a risk assessment to see if they must reduce risk from their toxic air contaminant emissions. Until then, sources will be required to report toxic air contaminant emissions triennially.

Table 11: Toxic Air Contaminants

Toxic Air Contaminants	Potential Emissions (tons/yr)
1,1,1-Trichloroethane (methyl chloroform)	0.0629
1,1,2,2-Tetrachloroethane	0.1829
1,1-Dichloroethane (ethylidene dichloride)	0.2283
1,1-Dichloroethene (vinylidene chloride)	0.0190
1,2-Dichloroethane (ethylene dichloride)	0.0398
1,2 -Dichloropropane (propylene dichloride)	0.0200
2-Propanol (isopropyl alcohol)	2.9566
Acetone	0.3997
Acrylonitrile	0.3298
Benzene	0.1176
Bromodichloromethane	0.5034
Carbon disulfide	0.0434
Carbon tetrachloride	0.0006
Carbonyl sulfide	0.0289
Chlorobenzene	0.0276
Chlorodifluoromethane	0.1104
Chloroethane (ethyl chloride)	0.0792
Chloroform	0.0035
Chloromethane (methyl chloride)	0.0600
Dichlorobenzene[1]	0.0303
Dichlorodifluoromethane	1.8637
Dichlorofluoromethane	0.2647
Dichloromethane (methylene chloride)	1.1925
Ethylbenzene	0.4805
Ethylene dibromide	0.0002
Trichlorofluoromethane (Fluorotrichloromethane)	0.1025
Hexane	0.5559
Mercury	0.0001
Methyl ethyl ketone	0.5019
Methyl isobutyl ketone	0.1839
Perchloroethylene (tetrachloroethylene)	0.6073
t-1,2-dichloroethene	0.2703
Toluene	2.8537
Trichloroethylene (trichloroethene)	0.3638
Vinyl chloride	0.4504
Xylenes	1.2611
Total Oregon TACs	**16.20**

TITLE V PERMIT CONDITION CHANGE LOG

36. The following is a list of condition-by-condition changes between the current Title V permit and the draft Title V permit:

Table 12: Title V Operating Permit Condition Change Log

New Permit Condition Number	Old Permit Condition Number	Description of Change	Reason for Change
Most	Most	Updated and corrected rule references	LRAPA rule changes, typos, etc.
Cover page	Cover page	Updated: "Issued To", "Information Relied Upon" and "Facility Contact Person" and installed the NAICS code.	New legal name for Lane County Public Works, new application for renewal, the facility contact has been updated and NAICS is required for Title V.
Definitions		Updated the definition of "modified EPA Method 9".	Updated regulation language.
1	1	Removed information about EPUD involvement in operation of the landfill.	SML and EPUD have a contractual agreement which does not need to be addressed in the Title V because the responsibility of the operation of the landfill is SML's.
2	2	Updated condition numbers that are LRAPA-only and/or DEQ-only enforceable	Regulatory updates
3	3	Updated emission unit list to indicate emission units with permit requirements.	Installed the Enclosed Flare as a control device to the EU: GCCS and installed 2 emergency generators as EU: CIA.
4	4	Listed the fugitive emission precautions.	Revised to more closely follow regulatory language.
5	5	Updated regulatory language. Moved Recordkeeping Requirement to its own condition. Added citations.	Clarity.
6	5.c	Moved Recordkeeping Requirement to its own condition.	Clarity.
7-9	6	Added condition to needed regulatory language and updated regulatory language. Changed numbering.	Installed needed regulatory language and revised to reflect updates to regulatory language. Changed number for clarity.
10	7	Updated regulatory language and citations.	To reflect updates to regulatory language.
11	--	Installed applicable requirement for diesel fuel with citation.	New requirement for the facility as a result of installing two (2) diesel-fired emergency generators.
12	--	Installed recordkeeping requirement for diesel fuel with citation.	New requirement for the facility as a result of installing two (2) diesel-fired emergency generators.
13	13	No change.	NA
14-22	8	Updated asbestos regulatory language and updated citations. Added new applicable requirement conditions.	Clarity.

New Permit Condition Number	Old Permit Condition Number	Description of Change	Reason for Change
23	9	Updated asbestos regulatory language.	Clarity.
24-26	--	Installed new asbestos regulatory monitoring language with citations.	Clarity.
27-29	10 & 12	Updated asbestos regulatory language and added applicable requirement.	Clarity.
30	--	Added asbestos reporting requirement condition.	Clarity.
--	14	Removed condition referencing 40 CFR part 60 subparts Cc and WWW applicability because these NSPS's have been superseded by 40 CFR part 60 subpart Cf.	Superseded condition.
31*	15, 15.a, 15.c.i & 15.d.i	Added and updated applicable regulatory language and citations to reflect that the facility is subject to 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA has been amended.	Added new applicable NSPS language and updated subpart AAAA condition language for clarity.
32*	--	Added applicable regulatory language and citations for determining when the GCCS can be capped, removed, or decommissioned per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA has been amended.	Title V permits are required to include all applicable requirements
33*	--	Added applicable regulatory language and citations removal criteria regulatory language for the GCCS per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA has been amended.	Title V permits are required to include all applicable requirements
34*	15	Added complete 40 CFR part 63 subpart AAAA regulatory language.	Enforceability and clarity.
35*	15.a, 15.b.i, 15.e.i.A, 15.f.i, 15.g & 15.h	Added and updated applicable regulatory language and citations for provisions related to the GCCS per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
36*	--	Added applicable regulatory language and citations to demonstrate compliance with the density of wells per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements

New Permit Condition Number	Old Permit Condition Number	Description of Change	Reason for Change
37*	--	Added applicable regulatory language and citations for provisions related the construction of the gas collection devices per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements
38*	--	Added applicable regulatory language and citations convey the LFG to the control system is in compliance with maximum flow per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements
39*	15.b.ii, 15.c.ii, 15.c.ii.B & 15.d.i	Added and updated applicable regulatory language and citations for compliance of the gas collection system per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
40*	--	Added applicable regulatory language and citations for timelines for installation of wells per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements
41*	15.f.ii, 15.f.iv & 15.f.iv.B	Added and updated applicable regulatory language and citations for procedures used for compliance with surface methane standards per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
42*	15.f.iii	Added and updated applicable regulatory language and citations for procedures used for compliance with surface emission monitoring devices per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
43*	15.l	Added and updated applicable regulatory language and citations for compliance with work practice per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
44*	--	Added applicable regulatory language and citations for complying with operating standards for the control system per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements
--	15.n	Removed condition.	40 CFR 63.6(e) and 40 CFR part 63, subpart A for SSM Plan no longer applies.

New Permit Condition Number	Old Permit Condition Number	Description of Change	Reason for Change
45*	15.e.ii, 15.e.iii & 15.e.iv	Added and updated applicable regulatory language and citations for complying with an active gas collection system per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
46*	--	Added applicable regulatory language and citations for complying with the control system using an enclosed flare per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
47-52*	--	Added applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
53*	15.i	Added and updated applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
54*	15.i – 15.i.iv	Added and updated applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
55*	15.j	Added and updated applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
56*	15.m	Added and updated applicable regulatory language and citations per 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
57*	--	Added and updated applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
58*	15.d.ii	Added and updated applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	For enforceability and clarity.
59*	--	Added and updated applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
60*	--	Added and updated applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.

New Permit Condition Number	Old Permit Condition Number	Description of Change	Reason for Change
61*	--	Updated applicable regulatory language and citations per 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
62*	--	Added applicable regulatory language and citations per 40 CFR part 60 subpart Cf.	Title V permits are required to include all applicable requirements.
63*	--	Added applicable regulatory language and citations per 40 CFR part 60 subpart Cf.	Title V permits are required to include all applicable requirements.
64-66*	--	Added applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
67*	15.k	Updated applicable regulatory language and citations per 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
68*	--	Added applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
69*	--	Added applicable regulatory language and citations per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
70*	--	Added applicable regulatory language and citations per 40 CFR part 60 subpart Cf.	Title V permits are required to include all applicable requirements.
71*	--	Added applicable regulatory language and citations per 40 CFR part 60 subpart Cf.	Title V permits are required to include all applicable requirements.
72-75*	--	Added applicable regulatory language and citations per 40 CFR part 63 subpart AAAA as amended.	Title V permits are required to include all applicable requirements.
--	15.o	Removed condition.	SML does not add liquid for anaerobic biodegradation.
76-106	--	Added new applicable state regulation OAR 340-239	Inclusion of new applicable regulatory language.
107-118	--	Added new applicable LRAPA regulations required for the enclosed flare.	Inclusion of applicable regulatory language.
119-121	16-18	Updated regulatory language.	Consistency.
122 & 123	19-20	Updated regulatory language.	Consistency.
124-129	--	Added applicable 40 CFR part 60 subpart IIII language.	Title V permits are required to include all applicable requirements.

New Permit Condition Number	Old Permit Condition Number	Description of Change	Reason for Change
130 & 131	21-23	Updated PM and GHG on the PSEL table. Updated an emission factor table with new emission factors. Updated regulatory language.	Clarity.
132-134	25.a-25.c	None.	Not Applicable.
135-144	--	Added specific monitoring requirement conditions.	Clarity.
145	24	Updated regulatory language.	Consistency.
146 & 147	--	Added specific testing requirement conditions.	Clarity.
148-151	26 & 27	Changed numbering of conditions.	Consistency.
152-159	--	Added specific recordkeeping requirement conditions.	Clarity.
160	31	Updated regulatory language.	Consistency.
161	--	Added applicable regulatory condition.	Title V permits are required to include all applicable requirements.
162-164	33-35	Changed shall to must, updated EPA's address.	Consistency.
165	28-30	Updated regulatory language and added conditions.	Clarity.
166	36	Updated GHG reporting condition to having to report annually.	Consistency.
167-179	--	Added conditions for specific reports requirements per 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA as amended. Added ACDP citation authority.	Title V permits are required to include all applicable requirements.
180	--	Added condition with all non-applicable federal requirements.	Consistency.
General conditions G1. - G29.	General Conditions G1. - G29.	Updated the general conditions to the latest version of the template.	Consistency.

*40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA Streamlining Document

GENERAL RECORDKEEPING REQUIREMENTS

37. The permit includes requirements for maintaining records of all testing, monitoring, and production information necessary for assuring compliance with the standards and calculating plant site emissions. The records of all monitoring specified in the Title V permit must be kept at the plant site for at least 5 years.

GENERAL REPORTING REQUIREMENTS

38. The permit includes a requirement for submitting semi-annual and annual monitoring reports that include semi-annual compliance certifications. Excess emissions are required to be reported to LRAPA immediately as well as in a logbook attached to the annual report. Emissions fees reports are required annually.

COMPLIANCE HISTORY

39. This facility is regularly inspected by LRAPA. The following table indicates the inspection history of this facility since the September 20, 2012 renewal:

Table 13: Full Compliance Evaluation

Type of Inspection	Date	Results
LRAPA - Full Compliance Evaluation	08/26/2014	In Compliance
LRAPA - Full Compliance Evaluation	06/14/2016	In Compliance
LRAPA - Full Compliance Evaluation	07/26/2018	In Compliance
LRAPA - Full Compliance Evaluation	08/24/2020	In Compliance

40. Since the facility's September 20, 2012, Title V renewal, LRAPA has received these complaints and issued the following violation notices and/or taken the following enforcement actions against this facility:

40.a. The facility was issued a Notice of Non-Compliance (NON 3830) on June 28, 2021 and Notice of Violation (NOV) No. 21-3830 on September 28, 2021 for failure to cover the active asbestos containing waste material (ACWM) disposal area at the end of each day that new ACWM is disposed of with a tarp that is identical to, or equivalent to, materials used to cover active areas of the general landfill in violation of Conditions 8.c and 8.h.i. A civil penalty in the amount of $3,900 was assessed. The facility and LRAPA entered into a Stipulated and Final Order (SFO) 21-3830 on October 11, 2021, to address non-compliance with Conditions 8.c and 8.h.i. The civil penalty was reduced to $1,950. The facility paid the fine and the file was closed.

Table 14: Complaint Log

Date of Complaint	Type of Complaint	Investigation Results
11/29/2012	Odor	LRAPA staff investigated.
07/15/2014	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
07/22/2014	Odor	Referred to Lane County Solid Waste.
12/10/2014	Odor/General Air Quality	LRAPA staff investigated and met with site contact at SML to drive the site.
12/26/2014	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
02/01/2015	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
02/06/2015	Odor/Health/General Air Quality	LRAPA staff investigated and notified SML personnel of the compliant.
03/06/2015	Odor/Health/General Air Quality	Notified SML personnel of the complaint.
03/19/2015	Odor	Notified SML of the compliant.
01/20/2016	Odor	Notified SML of the compliant.
01/22/2016	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
05/06/2016	Fume/Odor/Health/General Air Quality	LRAPA staff investigated.
10/28/2016	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
10/30/2016	Odor/Health/General Air Quality	LRAPA staff investigated and notified SML personnel of the compliant.
11/18/2016	Odor/Health/General Air Quality	LRAPA staff investigated and notified SML personnel of the compliant.
01/20/2017	Odor/General Air Quality	LRAPA staff investigated and notified SML personnel of the compliant.

Date of Complaint	Type of Complaint	Investigation Results
01/24/2017	Odor/Health/General Air Quality	Notified SML personnel.
01/26/2017	Odor	LRAPA staff investigated.
01/28/2017	Odor	LRAPA staff investigated.
01/29/2017	Odor	LRAPA staff investigated.
02/13/2017	Odor/Health/General Air Quality	LRAPA staff investigated.
02/14/2017	Odor/Health	LRAPA staff investigated.
02/15/2017	Odor	LRAPA staff investigated.
02/18/2017	Odor	Notified SML personnel.
02/23/2017	Odor	Notified SML personnel.
03/04/2017	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
03/05/2017	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
03/06/2017	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
03/15/2017	Odor	LRAPA staff investigated.
03/23/2017	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
03/31/2017	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
04/23/2017	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
04/25/2017	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
05/30/2017	Odor/Health/General Air Quality	LRAPA staff investigated and notified SML personnel of the compliant.
11/07/2017	Odor/Health	LRAPA staff investigated and notified SML personnel of the compliant.
11/25/2017	Odor/Health	LRAPA staff investigated and notified SML personnel of the compliant.
11/27/2017	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
02/02/2018	Odor	Notified SML personnel.
11/20/2018	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
01/21/2019	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
06/02/2020	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
01/31/2021	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
03/02/2021	Odor	LRAPA staff investigated and notified SML personnel of the compliant.
03/24/2021	Odor	LRAPA staff followed up with the complainant.
12/22/2021	General Air Quality	LRAPA staff investigated and notified SML personnel of the compliant.
01/28/2022	Odor	LRAPA staff investigated and notified SML personnel of the compliant.

SOURCE TEST RESULTS

41. No source testing has been required during the last permit term.

42. SML must conduct a performance test on the enclosed flare within 60 days after achieving the maximum production rate at which the enclosed flare will operate, but not later than 180 days after initial startup of the enclosed flare by following the methods and procedures in Conditions 51 and 100 and the Table 15.

Table 15: Test Methods by Pollutant

Measured Pollutant	Method	Standard
PM	DEQ Method 5	Emission Factor Verification
NO_X	EPA Method 7E	Emission Factor Verification
CO	EPA Method 10	Emission Factor Verification
VOC	EPA Method 18, 25/25A or 25C	Emission Factor Verification
Total Reduced Sulfur	EPA Method 16, 16A, or 16C	Emission Factor Verification
NMOC	EPA Method 25 or 25C	98% Reduction Efficiency or outlet of < 20 ppmv
Methane Outlet Concentration	EPA Method 25 or 25C	99% Destruction Efficiency
LFG gas heat value	EPA Method 2E and Method 25 or 25C	Gas heat value verification
Opacity	EPA Method 203B	≤ 20 percent

42.a. Methane: If the enclosed flare remains in compliance with the 99% destruction efficiency for three (3) consecutive years of performance tests, then the permittee may conduct performance test once every three (3) years, but no later than 45 days after each third anniversary date of the last performance test per Condition 83.a. [LRAPA 35-0120 and LRAPA 35-0140]

42.b. NMOC, PM, NOX, CO, and VOC: If the results of the emission factor verification testing on the enclosed flare are less than the emissions factors in the permit and the enclosed flare is achieving the 98% reduction rate or reduction of the outlet concentration is less than 20 parts per million by volume (ppmv), dry basis as hexane at 3 percent oxygen for NMOC during the initial performance test, then the permittee must conduct a performance test every five (5) years no later than 45 days after the fifth 5th) anniversary date of the last performance test. If the results of the emission factor verification testing are greater than the emission factors in the permit but the NMOC reduction rate is met, the permittee must apply to revise the emission factors in the permit and retest to show compliance with the amended emission factors within one (1) year of the previous test until compliance is demonstrated. [LRAPA 35-0120 and LRAPA 35-0140]

PUBLIC NOTICE

43. This draft permit was on public notice from October 5, 2022 to November 8, 2022. No comments were submitted in writing during the comment period. After the comment period, LRAPA will review any comments and modify the permit as may be appropriate. A proposed permit was sent to EPA for a 45-day review period. LRAPA may request and EPA may agree to an expedited review if there were no substantive or adverse comments during the comment period.

If the EPA does not object in writing, any person may petition the EPA within 60 days after the expiration of

EPA's 45-day review period to make such objection. Any such petition must be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided for in OAR 340-218-0210, unless the petitioner demonstrates that it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period.

EPA REVIEW

44. This proposed permit was sent to EPA on November 9, 2022, for a 45-day review period. Because no comments were received and there were no substantiative changes to the permit after the public comment period, LRAPA requested, and EPA agreed to expedited review. The public will have 60 days (from the expiration of EPA's 45-day period to petition the EPA to make objections to the permit. Any such petition must be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided for in OAR 340-218-0210, unless the petitioner demonstrates it was impracticable to raise such objections within such period, or unless the grounds for such objection rose after such period.

BAE:cmw
11/18/2022

EMISSION DETAIL SHEETS

Pollutant	Baseline [1]	Nettting Basis [2]		Plant Site Emisison Limit (PSEL) [3]			PTE Emissions
		Previous	Proposed	Previous PSEL	Proposed PSEL	PSEL Increase	
	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
PM	9.9	10	10	24	24	0	24.93
PM_{10}	2.1	2	2	14	14	0	10.73
$PM_{2.5}$	NA	NA	0.3	9	9	0	6.18
CO	0.02	0	0	99	99	0	51.66
NO_X	0	0	0	39	39	0	16.52
SO_2	0	0	0	39	39	0	8.80
VOC	0	0	0	39	39	0	19.36
H_2S	0	0	0	9	9	0	1.15
NMOC	0.1	0.1	0.1	49	49	0	48.88
GHG	139,398	139,398	139,398	293,678	261,056	-32,622	261,056

Plant Site Emission Limit											
Emission Units	**PM**	**PM_{10}**	**$PM_{2.5}$**	**NO_X**	**CO**	**SO_2**	**VOC**	**H_2S**	**NMOC**	**CH_4**	**GHG**
Fugitive Landfill Gas (F-LFG) (Uncontrolled)	0.00	0.00	0.00	0.00	3.65	0.00	18.75	1.12	47.48	7,419	205,837
Landfill GCCS with Enclosed Flare (GCCS)	4.47	4.47	4.47	15.94	47.83	8.74	0.56	0.03	1.40	0.28	55,220
Paved Industrial Roads (PIR)	6.61	1.32	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unpaved Paved Road (UPR)	12.86	3.94	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotals	**23.93**	**9.73**	**5.18**	**15.94**	**51.48**	**8.74**	**19.31**	**1.15**	**48.88**	**7,419**	**261,056**
Aggregate Insignificant Emissions (AIE)	0.66	0.66	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
Emergency Generator (CIA)	0.04	0.04	0.04	0.58	0.18	0.06	0.04	0.00	0.00	0.00	35.00
Subtotal	**0.70**	**0.70**	**0.70**	**0.58**	**0.18**	**0.06**	**0.04**	**0.00**	**0.00**	**0.00**	**35.00**
Potential to Emit (PTE)	**24.93**	**10.73**	**6.18**	**16.52**	**51.66**	**8.80**	**19.36**	**1.15**	**48.88**	**7,419.5**	**261,056**
PSELs	**24**	**14**	**9**	**39**	**99**	**39**	**39**	**9**	**49**	**7,419**	**261,056**

Fugitive Landfill Gas: Criteria Pollutant and Greenhouse Gas Emissions						
Pollutant [1]	**Chemical Formula [1]**	**Concentration (ppmv) [2]**	**Molecular Weight (lb/lb-mol) [3]**	**Emission Factor (lb/MMscf) [4]**	**Fugitive LFG Emissions**	
					Hourly (lb/hr)	**Annually (tpy)**
Non-methane Organic Compounds	NMOC	595	86.2	133.12	10.84	**47.48**
Volatile Organic Compounds	VOC	235	33.62	52.58	4.28	**18.75**
Carbon Monoxide	CO	141	28	10.25	0.83	**3.65**
Hydrogren Sulfide	H_2S	35.5	34.08	3.14	0.26	**1.12**
GHG: Methane	CH_4	500,000	16.04	20,801	1,693.88	**7,419.20**
GHG: Carbon Dioxide	CO_2	500,000	44.01	57,072	4,647.61	**20,356.54**
GHG Emission Total [6]	CO_2e	--	--	577,086	46,994.64	205,836.53

1. Based on EPA AP-42, Chapter 2.4, NMOC, VOC, CO, H_2S, CH_4, and CO_2 are the most abundant emitted as fugitive from the landfill.

2. NMOC, CO and H_2S default concentrations (ppmv) are located in EPA AP-42 Table Chapter 2.4-1 and 2.4-2 and the VOC concentration is based the assumption that VOC is 39% of No or Unknown NMOC concentrations per footnote "c" for Table 2.4-2. For GHG emissions ; CH_4 and CO_2 concentration is based that 50% of the emission are from CH_4 and 50% from CO_2.

3. Molecular Weight information is based on EPA AP-42 Table Chapter 2.4-1 and 2.4-2 and for CH_4 and CO_2 was gathered from Wiki.

4. Emission Factors were calculated using the "Ideal Gas Law" equation with the assuming standard temperatrue (68 deg F) and pressure.

5. Annual Fugitive LFG calculations is based on the LandGEM 2032 Projected flow of scfm. It is assumed that 75% is collected and controlled and 25% is fugitive. 25% fugitive emissions are multiplied by the emission factors and divided by 2000 pounds/ton to get tons per year.

6. Per Title 40 CFR chapter 1, subchapater C, part 98, subpart A, Table A-1 the "Global Warming Potential" of CH_4 is 25 greater than that of CO_2. When calculating the GHG total emissions for the F-LFG the total CH_4 was multiplied by 25 than added to the CO_2 total to get the GHG Emission Total

7. GHG total with the Generic PSEL added to set correct baseline.

INFORMATION USED TO CALCULATE FUGITIVE EMISSIONS

2032 Estimated F-LFG (MMscf/yr)	**713.37**	Based on the 2032 LandGEM Projected Total LFG Flow in scfm of 5428.96 scfm: where
2032Estimated F-LFG (MMscf/day)	1.954427	75% is collected and controlled and 25% is fugitive being emitted to the
2032 Estimated F-LFG (MMscf/hr)	0.081434	atmosphere. (see 2032 Fugitive LFG Table.

Information		Units of measurement
Methane lb-lb mol	16.04	lb lb-mol
Carbon Dioxide lb-lb mol	44.01	lb lb-mol
atm =	1	atm
Temperature in Rankine	528	R
Ideal Gas Constant	0.73024	atm*scf/lb-mol*T
scf to MMscf	1,000,000	MMscf
LFG Ration	50	%
Methane and Carbon Dioxide comprise of LFG as a 50% to 50% ratio. Assuming 1,000,000 = part per million by volume (ppmv) then both Methane and Carbon Dioxide comprise of 500,000 ppmv each		

NOTES:	
F-LFG = Fugitive Landfill Gas	MMscf = Million standard cubic feet
lb-lb mol = pound per pound mole	scfm = stardar cubic foot per minute
ppmv = parts per million	R = Idea Gas Constant
atm = atmosphere	T = Temperature (in Rankine (R))
d = density	M = molar mass
P = pressure	
Ideal Gas Law:	d = (P*M)/(R*T)
REFERENCES:	
LFG emissions model (LandGEM) version 3.02 dated May 2005. Report - Pollutant Parameters (assumes No or Unknown co-disposal)	
LandGEM version 3.02 standard landfill parameters	

Landfill Gas Emissions	
Methodology:	Modeled LFG, AP-42 default values
	Conersions assume ideal gas behavior

Molecular Weight (g/mol)	
Hexane (C_6H_{14}) = used for NMOC	86.2
Hexane (C_6H_{14}) = used for VOC as % of NMOC	33.62
Carbon Monoxide (CO) =	28
Hydrogen Sulfide (H_2S) =	34.08

Fugitive LFG =	MM scf/yr	US EPA LandGem (SML supplied)
	MM scf/yr is based on year 2032	

LandGEM 2032 Total	5428.96	cf/min	NMOC	595	ppmv as hexane	CO2	500,000	ppmv	
	60	min/hr	*VOC	235	ppmv as hexane	Methane	500,000	ppmv	
	24	hr/day	CO	141	ppmv				
	365	day/yr	H_2S	35.5	ppmv				
Total Amount of LFG Collected by GCCS	75	%	ppmv based on AP-42, Table 2.4-1 or 2.4.2						

*For purposes not assoicated with NSPS/Emission Guideline compliance, the default VOC content at No or Unknown sites = 39 percent by weight 235 ppmv as hexane

Ideal Gas Law		
		PV =nRT or n = PV/RT x MM
0.082057	L/g	P = Pressure measured in Pascals, Pa
28.32	L/scf	V = Volume (cubic meters (m3))
8.3145	(m3*L/g)/(K*	R = 8.3145 (m^3 * L/g)/(K * mol)
293.16	K	T = Kelvins
2000	lb/ton	pounds to tons coversion factor
453.592	g/lb	Grams to pounds conversion factor

NMOC	0.42445	MM scf/yr
=	12.0205	MM L/yr
=	499,691.65	mol
=	43,073,420	g
=	47.48036	tons
Emission Factor (EF)	**133.12**	**lb/MMscf F-LFG**
VOC	0.16764	MM scf/yr
=	4.7476	MM L/yr
=	197,357.21	mol
=	17,012,191	g
=	18.75275	tons
Emission Factor (EF)	**52.58**	**lb/MMscf F-LFG**
CO	0.10058	MM scf/yr
=	2.8486	MM L/yr
=	118,414.32	mol
=	3,315,601	g
=	3.65483	tons
Emission Factor (EF)	**10.25**	**lb/MMscf F-LFG**
H_2S	0.02532	MM scf/yr
=	0.7172	MM L/yr
=	29,813.54	mol
=	1,016,045	g
=	1.12000	tons
Emission Factor (EF)	**3.14**	**lb/MMscf F-LFG**

EPA AP-42 TABLE 2.4-1: DEFAULT CONCENTRATIONS FOR LANDFILL GAS CONSTITUENTS							Fugitive Emissions (25%)	Combustion Emissions (2% of collected)	Combined Emissions (Fug + Comb)
TAC	**HAP**	Compound	CAS	Molecular Weight (lb/lb mol)	Default Concentration (ppmv)	**EF (lb/mmcf)**	Fugitive Emissions (ton/yr)	Combustion Emissions (ton/yr)	**Combined Emissions (ton/yr)**
TAC	HAP	1,1,1-Trichloroethane (methyl chloroform)	71-55-6	133.41	0.48	**0.17**	0.0593	0.0036	**0.0629**
TAC	HAP	1,1,2,2-Tetrachloroethane	79-34-5	167.85	1.11	**0.48**	0.1726	0.0104	**0.1829**
TAC	HAP	1,1-Dichloroethane (ethylidene dichloride)	75-34-3	98.97	2.35	**0.60**	0.2154	0.0129	**0.2283**
TAC	HAP	1,1-Dichloroethene (vinylidene chloride)	75-35-4	96.94	0.2	**0.050**	0.0180	0.0011	**0.0190**
TAC	HAP	1,2-Dichloroethane (ethylene dichloride)	107-06-2	98.96	0.41	**0.11**	0.0376	0.0023	**0.0398**
TAC	HAP	1,2 -Dichloropropane (propylene dichloride)	78-87-5	112.99	0.18	**0.053**	0.0188	0.0011	**0.0200**
TAC		2-Propanol (isopropyl alcohol)	67-63-0	60.11	50.1	**7.82**	2.7893	0.1674	**2.9566**
TAC		Acetone	67-64-1	58.08	7.01	**1.06**	0.3771	0.0226	**0.3997**
TAC	HAP	Acrylonitrile	107-13-1	53.06	6.33	**0.87**	0.3111	0.0187	**0.3298**
TAC	HAP	Benzene	71-43-2	78.11	1.91	**0.39**	0.1109	0.0067	**0.1176**
TAC		Bromodichloromethane	75-27-4	163.83	3.13	**1.33**	0.4749	0.0285	**0.5034**
		Butane	106-97-8	58.12	5.03	**0.76**	0.2708	0.0162	**0.2870**
TAC	HAP	Carbon disulfide	75-15-0	76.13	0.58	**0.11**	0.0409	0.0025	**0.0434**
TAC	HAP	Carbon tetrachloride	56-23-5	153.84	0.004	**0.0016**	0.0006	0.0000	**0.0006**
TAC	HAP	Carbonyl sulfide	463-58-1	60.07	0.49	**0.076**	0.0273	0.0016	**0.0289**
TAC	HAP	Chlorobenzene	108-90-7	112.56	0.25	**0.073**	0.0261	0.0016	**0.0276**
TAC		Chlorodifluoromethane	75-45-6	86.47	1.3	**0.29**	0.1041	0.0062	**0.1104**
TAC	HAP	Chloroethane (ethyl chloride)	75-00-3	64.52	1.25	**0.21**	0.0747	0.0045	**0.0792**
TAC	HAP	Chloroform	67-66-3	119.39	0.03	**0.009**	0.0033	0.0002	**0.0035**
TAC	HAP	Chloromethane (methyl chloride)	74-87-3	50.49	1.21	**0.16**	0.0566	0.0034	**0.0600**
TAC	HAP	Dichlorobenzene[1]	106-46-7	147	0.21	**0.080**	0.0286	0.0017	**0.0303**
TAC		Dichlorodifluoromethane	75-71-8	120.91	15.7	**4.93**	1.7582	0.1055	**1.8637**
TAC		Dichlorofluoromethane	75-43-4	102.92	2.62	**0.70**	0.2498	0.0150	**0.2647**
TAC	HAP	Dichloromethane (methylene chloride)	75-09-2	84.94	14.3	**3.15**	1.1250	0.0675	**1.1925**
		Dimethyl sulfide (methyl sulfide)	75-18-3	62.13	7.82	**1.26**	0.4500	0.0270	**0.4770**
		Ethane	74-84-0	30.07	889	**69.42**	24.7596	1.4856	**26.2452**
		Ethanol	64-17-5	46.08	27.2	**3.25**	1.1609	0.0697	**1.2305**
		Ethyl mercaptan (ethanethiol)	78-08-1	62.13	2.28	**0.37**	0.1312	0.0079	**0.1391**
TAC	HAP	Ethylbenzene	100-41-4	106.16	4.61	**1.27**	0.4533	0.0272	**0.4805**
TAC	HAP	Ethylene dibromide	106-93-4	187.88	0.001	**0.00049**	0.0002	0.0000	**0.0002**
TAC		Trichlorofluoromethane (Fluorotrichloromethane)	75-69-4	137.38	0.76	**0.27**	0.0967	0.0058	**0.1025**
TAC	HAP	Hexane	110-54-3	86.18	6.57	**1.47**	0.5244	0.0315	**0.5559**
TAC	HAP	Mercury	7439-97-6	200.61	0.000292	**0.00015**	0.0001	0.0000	**0.0001**
TAC		Methyl ethyl ketone	78-93-3	72.11	7.09	**1.33**	0.4735	0.0284	**0.5019**
TAC	HAP	Methyl isobutyl ketone	108-10-1	100.16	1.87	**0.49**	0.1735	0.0104	**0.1839**
		Methyl mercaptan	74-93-1	48.11	2.49	**0.31**	0.1110	0.0067	**0.1176**
		Pentane	109-66-0	72.15	3.29	**0.62**	0.2199	0.0132	**0.2330**
TAC	HAP	Perchloroethylene (tetrachloroethylene)	127-18-4	165.83	3.73	**1.61**	0.5729	0.0344	**0.6073**
		Propane	74-98-6	44.09	11.1	**1.27**	0.4533	0.0272	**0.4805**
TAC		t-1,2-dichloroethene	156-60-5	96.95	2.84	**0.71**	0.2550	0.0153	**0.2703**
TAC	HAP	Trichloroethylene (trichloroethene)	79-01-6	131.4	2.82	**0.96**	0.3432	0.0206	**0.3638**
TAC	HAP	Toluene	108-88-3	92.13	39.3	**9.40**	2.6922	0.1615	**2.8537**
TAC	HAP	Vinyl chloride	75-01-4	62.5	7.34	**1.19**	0.4249	0.0255	**0.4504**
TAC	HAP	Xylenes	1330-20-7	106.16	12.1	**3.34**	1.1897	0.0714	**1.2611**

Year [1]	Waste Acceptance Rate [2] (Tons/Yr)	Cummulative Waste in Place [3] (Tons)	USEPA LandGEM LFG Projection [4] (scfm)	Year [1]	Waste Acceptance Rate [2] (Tons/Yr)	Cummulative Waste in Place [3] (Tons)	USEPA LandGEM LFG Projection [4] (scfm)	Year [1]	Waste Acceptance Rate [2] (Tons/Yr)	Cummulative Waste in Place [3] (Tons)	USEPA LandGEM LFG Projection [4] (scfm)	Year [1]	Waste Acceptance Rate [2] (Tons/Yr)	Cummulative Waste in Place [3] (Tons)	USEPA LandGEM LFG Projection [4] (scfm)	Year [1]	Waste Acceptance Rate [2] (Tons/Yr)	Cummulative Waste in Place [3] (Tons)	USEPA LandGEM LFG Projection [4] (scfm)
1976	3670	0	0	2007	265848	6650550.893	3750.937492	2038	408188.577	15873608.73	6084.114615	2069	0	24042307.5	4505.841268	2099	0	24042307.5	1005.389084
1977	121940	3670	3.726484459	2008	243946	6916398.893	3837.941742	2039	416352.348	16281797.31	6201.859794	2070	0	24042307.5	4286.088797	2100	0	24042307.5	956.3556796
1978	230860	125610	127.3615032	2009	216363	7160344.893	3898.463653	2040	424679.395	16698149.66	6322.151892	2071	0	24042307.5	4077.053779	2101	0	24042307.5	909.7136627
1979	290590	356470	355.5631435	2010	218949	7376707.893	3928.02635	2041	433172.983	17122829.06	6445.032483	2072	0	24042307.5	3878.21352	2102	0	24042307.5	865.3464038
1980	244370	647060	633.2845546	2011	207277	7595656.893	3958.773058	2042	441836.443	17556002.04	6570.544428	2073	0	24042307.5	3689.070815	2103	0	24042307.5	823.1429617
1981	147290	891430	850.529967	2012	214185	7802933.893	3976.168589	2043	450673.172	17997838.48	6698.731881	2074	0	24042307.5	3509.152708	2104	0	24042307.5	782.9978058
1982	135260	1038720	958.6060509	2013	209429	8017118.893	3999.73005	2044	459686.635	18448511.65	6829.640292	2075	0	24042307.5	3338.009311	2105	0	24042307.5	744.8105522
1983	144460	1173980	1049.19605	2014	223114	8226547.893	4017.313206	2045	468880.368	18908198.29	6963.316412	2076	0	24042307.5	3175.212676	2106	0	24042307.5	708.4857129
1984	169660	1318440	1144.709519	2015	229894	8449661.893	4047.934446	2046	478257.975	19377078.66	7099.808304	2077	0	24042307.5	3020.355726	2107	0	24042307.5	673.9324569
1985	171030	1488100	1261.15259	2016	246173	8679555.893	4083.94662	2047	487823.135	19855336.63	7239.165344	2078	0	24042307.5	2873.051239	2108	0	24042307.5	641.0643832
1986	183002.1	1659130	1373.307751	2017	269096	8925728.893	4134.732007	2048	497579.597	20343159.77	7381.438237	2079	0	24042307.5	2732.930877	2109	0	24042307.5	609.7993043
1987	195812.247	1842132.1	1492.149402	2018	270128	9194824.893	4206.316367	2049	507531.189	20840739.36	7526.679022	2080	0	24042307.5	2599.644265	2110	0	24042307.5	580.0590413
1988	209519.104	2037944.347	1618.202383	2019	287006	9464952.893	4275.457399	2050	517681.813	21348270.55	7674.941085	2081	0	24042307.5	2472.858118	2111	0	24042307.5	551.769228
1989	224185.442	2247463.451	1752.025505	2020	287871	9751958.893	4358.364151	2051	528035.449	21865952.37	7826.279174	2082	0	24042307.5	2352.255405	2112	0	24042307.5	524.8591252
1990	237818	2471648.893	1894.214061	2021	291513	10039829.89	4438.105805	2052	538596.158	22393987.82	7980.749404	2083	0	24042307.5	2237.534555	2113	0	24042307.5	499.2614436
1991	260000	2709466.893	2043.310375	2022	297343.26	10331342.89	4517.656467	2053	549368.082	22932583.97	8138.409279	2084	0	24042307.5	2128.408707	2114	0	24042307.5	474.9121757
1992	243060	2969466.893	2207.658576	2023	303290.125	10628686.15	4599.24739	2054	560355.443	23481952.06	8299.317704	2085	0	24042307.5	2024.60499	2115	0	24042307.5	451.7504356
1993	243149	3212526.893	2346.790699	2024	309355.928	10931976.28	4682.897469	2055	571562.552	24042307.5	8463.535	2086	0	24042307.5	1925.863839	2116	0	24042307.5	429.7183068
1994	242422	3455675.893	2479.227639	2025	315543.046	11241332.21	4768.627046	2056	0	24042307.5	8631.122919	2087	0	24042307.5	1831.938351				
1995	242366	3698097.893	2604.467363	2026	321853.907	11556875.25	4856.457886	2057	0	24042307.5	8210.178087	2088	0	24042307.5	1742.593664				
1996	241829	3940463.893	2723.542212	2027	328290.985	11878729.16	4946.413156	2058	0	24042307.5	7809.762976	2089	0	24042307.5	1657.606368				
1997	241356	4182292.893	2836.264448	2028	334856.805	12207020.14	5038.517406	2059	0	24042307.5	7428.876342	2090	0	24042307.5	1576.763951				
1998	242036	4423648.893	2943.008875	2029	341553.941	12541876.95	5132.796552	2060	0	24042307.5	7066.565767	2091	0	24042307.5	1499.864266				
1999	240988	4665684.893	3045.237781	2030	348385.02	12883430.89	5229.27786	2061	0	24042307.5	6721.925288	2092	0	24042307.5	1426.715023				
2000	241980	4906672.893	3141.416794	2031	355352.72	13231815.91	5327.989935	2062	0	24042307.5	6394.093123	2093	0	24042307.5	1357.13331				
2001	242300	5148652.893	3233.91237	2032	362459.775	13587168.63	5428.962704	2063	0	24042307.5	6082.249522	2094	0	24042307.5	1290.945137				
2002	241561	5390952.893	3322.221808	2033	369708.97	13949628.41	5532.227411	2064	0	24042307.5	5785.614712	2095	0	24042307.5	1227.985				
2003	241733	5632513.893	3405.47397	2034	377103.15	14319337.38	5637.816606	2065	0	24042307.5	5503.446953	2096	0	24042307.5	1168.095465				
2004	250684	5874246.893	3484.840524	2035	384645.213	14696440.53	5745.764137	2066	0	24042307.5	5235.040678	2097	0	24042307.5	1111.126777				
2005	252854	6124930.893	3569.425088	2036	392338.117	15081085.74	5856.105147	2067	0	24042307.5	4979.724731	2098	0	24042307.5	1056.936484				
2006	272766	6377784.893	3652.087813	2037	400184.879	15473423.86	5968.876067	2068	0	24042307.5	4736.86069	2099	0	24042307.5	1005.389084				

NOTES

LFG = Landfill gas

scfm = Standard cubic feet per minute

USEPA = United States Environmental Protection Agency

REFERENCES

(1) Landfill Gas Emissions Model, Version 3.02, May 2005

(2) Waste tonnnages provided by Short Mountain Landfill, assumes 2% increase anually for future years beyond 2021 until landfill closure in 2056.

(3) Value represents sum of annual waste acceptance and cumulative waste acceptance rate from previous year.

(4) Flowrate derived from annual waste acceptance rates shown above. Assumes Clean Air Act (CAA) default model parameters.

ENCLOSED FLARE: POTENTIAL EMISSIONS BASED ON MAXIMUM HOURS OF OPERATION		
Pollutant	**lb/hour**	**ton/year**
PM, PM_{10}, & $PM_{2.5}$	1.02	4.47
NO_X	3.64	15.94
CO	10.92	47.83
SO_2	2.00	8.74
VOC	0.13	0.56
HAP	0.04	0.19
H_2S	0.01	0.03
TRS	0.01	0.03
NMOC	0.32	1.40

PM, PM_{10}, & $PM_{2.5}$: This EF comes from EPA AP-42 Table 2.4-5 Emission Factors for Flares (enclosed flares)

NO_X: Emission Factor for NO_X of 0.06 lb/MMBtu is based on the *PEI Manufacturer's Guaranteed Performance Specifications Sheet* submitted to LRAPA as part of the Application. Equation 5 was used to calculate emissions (lb/hr = MMBtu/hr x EF) where MMBtu/hr was based on inlet High Heat Value (HHV) for the flare.

CO: Emission Factor for CO of 0.20 lb/MMBtu is based on the PEI Manufacturer's Guaranteed Performance Specifications Sheet submitted to LRAPA as part of the Application. Equation 5 was used to calculate emissions (lb/hr = MMBtu/hr x EF) where MMBtu/hr was based on inlet Low Heat Value (lHV) for the flare.

SO_2: Using SO_2 molecular weight of 64.066 lb/lbmol divided by the conversion factor of 385.1 x 106 ppmv to lb/ft^3 then multiplying by the inlet concentration of H_2S (0.01 x 10000 = ppm), assuming all H_2S converts into SO_2 without a destruction efficiency to get 1.66E-05 lb/ft3 and multiplying by 10^6 to get 16.64 lb/MMcf

VOC: Utilizing EPA AP-42 Chapter 2.4 Table 2.4-1, for each individual VOC in the table, the molecular weight (lb/lbmol) multiplied by the Default Concentration in ppmv divided by 385.1 x 106 lbmol/ppmv*ft^3 (the conversion factor from ppmv to lb/ft^3) to provide the lb/scf for each individual VOC. The VOC total is 1.07E-04 lb/scf. The flare will control the VOC emissions by 99%. Building the control factor of the enclosed flare of 99%, 1.07E-04 lb/scf is multiplied by 0.01 (1-(99/100)) to the controlled EF of 1.07E-06 lb/scf. To convert from lb/scf to lb/MMscf, multiple by 10^6 to the controlled EF in lb/MMscf of 1.07 lb/MMscf.

HAP: Utilizing EPA AP-42 Chapter 2.4 Table 2.4-1, for each individual HAP in the table, the molecular weight (lb/lbmol) multiplied by the Default Concentration in ppmv divided by 385.1 x 10^6 lbmol/ppmv*ft3 (the conversion factor from ppmv to lb/ft3) to provide the lb/scf for each individual HAP. The HAPs total is 1.76E-05 lb/scf. The flare will control the HAPs emissions by 98%. Building the control factor of the enclosed flare of 98%, 1.76E-05 lb/scf is multiplied by 0.02 (1-(98/100)) to the controlled EF of 3.52E-07. To convert from lb/scf to lb/MMscf, multiple by 10^6 to the controlled EF in lb/MMscf of 3.52E-01 lb/MMscf.

H_2S and TRS: 2012 Title V H_2S Emission Factor of 3.14 lb/MMscf was used as the basis and the control factor of 98% was built into the EF. The 2012 TV permit did not separate the H_2S and TRS. In this Construction ACDP the TRS was separate as it's own pollutant, but utilized the H_2S EF as conservative.

NMOC: 2012 Title V NMOC Emission Factor of 133.1 lb/MMscf was used as the basis and the control factor of 98% was built into the EF

Constants		
Maximum gas flow of enclosed flare per min	2000	scfm
Maximum gas flow of enclosed flare per year	1051.20	MMcf/yr
Minutes per Hour Conversion	60	mins/hr
Hours per year Conversion	8760	hr/yr
Conversion factor (385.1×10^6)	385100000	ppmv to lb/ft3
VOC Controlled Factor	99	%
VOC Controlled Factor	98	%
Conversion to lb/MMscf	1.00E+06	Parts per Millions (ppmv)
NMOC	133.1	lb/MMscf
H_2S	3.14	lb/MMscf

GREENHOUSE GAS EMISSIONS AT 8,760 HOURS PER YEAR			
	CO2e		
	Pounds/year	**lb/hour**	**TPY**
Passthrough CO_2	49,254,629.8	5,622.7	24,627.3
Combustion CO_2	60,871,887.8	6,948.8	30,435.9
CH_4 Emissions	93,523.2	10.7	46.8
N_2O Emissions	219,475.5	25.1	109.7
Total CO_2e	**110,439,516.2**	**12,607.3**	**55,219.8**

Information		
Flow (SCFM)	2000	scfm
Ch4% (16.04 g/mol)	50	%
CO2%	41	%
O2%	1.5	%
N2%	7.4	%
Potential H2S%	0.01	%
Limited hours of operations	2000	hr/yr
Potential Op hours w/o Limits	8760	hr/yr
Time conversion	60	min/hr
Conversion factor	385100000	ppmv to lb/ft3
Converstion factor ppmv	10,000	ppmv
MMBtu/year (with limits)	121,320	MMBtu/yr
MMBtu/year (w/out limits)	531,382	MMBtu/yr
Conversion factor: weight	2,000	lb/ton
Conversion factor	2.2	kg/lb

GHG Constants	$mtCO_2$				
GWP CO2	1				
GWP CH4	25				
GWP N2O	298				
	LFG	**Natural Gas**	**Propane Gas**	**Diesel/Distillate 2**	
CO2 Emission Factor	52.07	53.06	61.46	73.96	kg CO2/MMBtu, 40 CFR 98 Table C-1
CH4 Emission Factor	0.0032	0.001	0.003	0.003	kg CH4/MMBtu, 40 CFR 98 Table C-2
N2O Emission Factor	0.00063	0.0001	0.0006	0.0006	kg N2O/MMBtu, 40 CFR 98 Table C-2
CH4 Density @ 70F (lb/scf)	0.041				
CO2 Density @ 70F (lb/scf)	0.1128				

Annual Vehicle Miles Traveled, EU: UPR			
VMT	26,150		
Total Annual Particulate Matter Emissions, tons ((E x VMT)/2000 lb/ton			
PM	12.86	tons per year	
PM10	3.94	tons per year	
PM2.5	0.39	tons per year	

Unpaved Roads: EU - UPR		
Methodology		Empirical Equation
Source Used		EPA AP-42. Chapter 13.2.2, Eq. 1a
Equation		E = k(s/12)^a(W/3)^b
Variable Descriptions and Calculations		
PM		
E =		Emission Factor, pounds per vehicle miles traveled (lb/VMT)
k =	4.9	Particle siz multiplier (lb/VMT), AP-42, Table 13.2.2.2
a =	0.7	Unitless constant, AP-42, Table 13.2.2.2
b =	0.45	Unitless constant, AP-42, Table 13.2.2.3
s =	6.4	Silt Content of road surface material, %, AP-42, Table 13.2.2.1
W =	21	Mean vehicle weight, tons (source supplied)
E =	6.68	lb/VMT (PM_{10} emission factor)
p =	150	Number of annual days with at least 0.01 inches of precipitation, unitless (AP-42 Figure 13.2.2-1)
E(ext) =	0.98	EF adjusted for rain days (AP-42, 13.2.2, Eq (2)), 75% reduction - wet supp
PM10		
E =		Emission Factor, pounds per vehicle miles traveled (lb/VMT)
k =	1.5	Particle siz multiplier (lb/VMT), AP-42, Table 13.2.2.2
a =	0.9	Unitless constant, AP-42, Table 13.2.2.2
b =	0.45	Unitless constant, AP-42, Table 13.2.2.3
s =	6.4	Silt Content of road surface material, %, AP-42, Table 13.2.2.1
W =	21	Mean vehicle weight, tons (source supplied)
E =	2.04	lb/VMT (PM_{10} emission factor)
p =	150	Number of annual days with at least 0.01 inches of precipitation, unitless (AP-42 Figure 13.2.2-1)
E(ext) =	0.30	EF adjusted for rain days (AP-42, 13.2.2, Eq (2)), 75% reduction - wet supp
PM2.5		
E =		Emission Factor, pounds per vehicle miles traveled (lb/VMT)
k =	0.15	Particle siz multiplier (lb/VMT), AP-42, Table 13.2.2.2
a =	0.9	Unitless constant, AP-42, Table 13.2.2.2
b =	0.45	Unitless constant, AP-42, Table 13.2.2.3
s =	6.4	Silt Content of road surface material, %, AP-42, Table 13.2.2.1
W =	21	Mean vehicle weight, tons (source supplied)
E =	0.20	lb/VMT (PM_{10} emission factor)
p =	150	Number of annual days with at least 0.01 inches of precipitation, unitless (AP-42 Figure 13.2.2-1)
E(ext) =	0.030	EF adjusted for rain days (AP-42, 13.2.2, Eq (2)), 75% reduction - wet supp

Annual Vehicle Miles Traveled, EU: PIR			
VMT	55,000		
Total Annual Particulate Matter Emissions, tons ((E x VMT)/2000 lb/ton			
PM	3.73	tons per year	
PM10	0.75	tons per year	
PM2.5	0.18	tons per year	

Paved Industrial Roads: EU - PIR		
Methodology		Empirical Equation
Source Used		EPA AP-42. Chapter 13.2.1, Eq. 3
Equation		E = [k*(sL)^0.91(W)^1.02]*(1-1.2P/N)
Variable Descriptions and Calculations		
PM		
E =		Emission Factor, pounds per vehicle miles traveled (lb/VMT)
k =	0.011	Particle size multiplier for particulate size range (lb/VMT), AP-42, Table 13.2.1
sL =	1.1	Road surface silt loading (g/m^2), AP-42, Table 13.2.1-3
W =	21	Average vehicle weight, tons (source supplied)
E =	0.27	lb/VMT (PM_{10} emission factor)
P =	150	Number of annual days with at least 0.01 inches of precipitation, unitless (AP-42 Figure 13.2.2-1)
N =	365	Number of days in annual averaging period
E(ext) =	0.136	EF adjusted for rain days (AP-42, 13.2.1.3, Eq 3), 75% reduction - wet supp
PM10		
E =		Emission Factor, pounds per vehicle miles traveled (lb/VMT)
k =	0.0022	Particle size multiplier for particulate size range (lb/VMT), AP-42, Table 13.2.1
sL =	1.1	Road surface silt loading (g/m^2), AP-42, Table 13.2.1-3
W =	21	Average vehicle weight, tons (source supplied)
E =	0.05	lb/VMT (PM_{10} emission factor)
p =	150	Number of annual days with at least 0.01 inches of precipitation, unitless (AP-42 Figure 13.2.2-1)
N =	365	Number of days in averaging period
E(ext) =	0.027	EF adjusted for rain days (AP-42, 13.2.1.3, Eq 3), 75% reduction - wet supp
PM2.5		
E =		Emission Factor, pounds per vehicle miles traveled (lb/VMT)
k =	0.00054	Particle size multiplier for particulate size range (lb/VMT), AP-42, Table 13.2.1
sL =	1.1	Road surface silt loading (g/m^2), AP-42, Table 13.2.1-3
W =	21	Average vehicle weight, tons (source supplied)
E =	0.01	lb/VMT (PM_{10} emission factor)
p =	150	Number of annual days with at least 0.01 inches of precipitation, unitless
N =	365	Number of days in averaging period
E(ext) =	0.007	EF adjusted for rain days (AP-42, 13.2.1.3, Eq 3), 75% reduction - wet supp

Emergency Generator (CIA): 2021 Caterpillar D125, 480V Standby Diesel Genset					
Pollutant	Max Design Capacity (BHP)	Emission Factors		Hourly Emission Rate (lbs/hr)	Emissions for 100 hours/yr (tons/yr)
		Factors	Units		
PM [(1)]	229.00	3.31E-04	lb/hp-hr	0.076	0.004
PM_{10} [(1)]	229.00	3.31E-04	lb/hp-hr	0.076	0.004
$PM_{2.5}$ [(1)]	229.00	3.31E-04	lb/hp-hr	0.076	0.004
NO_X [(2)]	229.00	5.58E-03	lb/hp-hr	1.277	0.064
CO [(1)]	229.00	5.73E-03	lb/hp-hr	1.313	0.066
SO_2 [(3)]	229.00	2.05E-03	lb/hp-hr	0.469	0.023
VOC [(2)]	229.00	3.09E-04	lb/hp-hr	0.071	0.004
1. EPA Tier 3 limit used as conservative emission factor in lieu of manufacturer's test data emission factors for PM and CO.					
2. Used Caterpillar manufacturer's testing data					
3. EPA AP-42, Chapter 3.3, Table 3.3-1 for diesel fuel industrial engines					

Emergency Generator (CIA): 2013 Caterpillar 250kW 480V Standby Diesel Genset					
Pollutant	Max Design Capacity (BHP)	Emission Factors		Hourly Emission Rate (lbs/hr)	Emissions for 100 hours/yr (tons/yr)
		Factors	Units		
PM [(1)]	335.00	2.20E-03	lb/hp-hr	0.737	0.037
PM_{10} [(1)]	335.00	2.20E-03	lb/hp-hr	0.737	0.037
$PM_{2.5}$ [(1)]	335.00	2.20E-03	lb/hp-hr	0.737	0.037
NO_X [(2)]	335.00	3.10E-02	lb/hp-hr	10.385	0.519
CO [(1)]	335.00	6.68E-03	lb/hp-hr	2.238	0.112
SO_2 [(3)]	335.00	2.05E-03	lb/hp-hr	0.687	0.034
VOC [(2)]	335.00	2.47E-03	lb/hp-hr	0.827	0.041
1. EPA Tier 3 limit used as conservative emission factor in lieu of manufacturer's test data emission factors for PM and CO.					
2. Used Caterpillar manufacturer's testing data					
3. EPA AP-42, Chapter 3.3, Table 3.3-1 for diesel fuel industrial engines					

**[Streamlining Documentation: 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA]