LANE REGIONAL AIR PROTECTION AGENCY
TITLE V OPERATING PERMIT
REVIEW REPORT
1010 Main Street
Springfield, OR 97477

Emerald People's Utility District **Permit No. 202536**
Short Mountain Generation Facility
84777 Dillard Access Road
Eugene, Oregon 97405

Source Information:

Primary SIC	4911
Secondary SIC	--
Primary NAICS	221118
Secondary NAICS	--
Source Categories (LRAPA Title 37, Table 1)	B-25: Electrical power generation from combustion, excluding units used exclusively as emergency generators and units less than 500 kW

Source Categories (LRAPA Title 37, Table 1)	C-5: All sources having the potential to emit more than 100 tons or more of any regulated pollutant, except GHG, in a year C-6: All sources having the potential to emit more than 10 tons or more of a single hazardous air pollutant in a year
Public Notice Category	III

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)	02/15
Semi-Annual Report (due date)	08/15
Greenhouse Gas (due date)	03/31
Monthly Report (due dates)	N

Quarterly Report (due dates)	N
Excess Emissions Report	Y
Other Reports (due date)	N

Air Programs

NSPS (list subparts)	N
NESHAP (list subparts)	N
CAM	N
Regional Haze (RH)	N
TACT	N
Part 68 Risk Management	N
Cleaner Air Oregon (CAO)	N
Synthetic Minor (SM)	N
SM-80	N

Title V	Y
Major FHAP Source	Y
Federal Major Source	Y
Type A State New Source Review	N
Type B State New Source Review	N
Prevention of Significant Deterioration (PSD)	N
Nonattainment New Source Review (NNSR)	N

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LIST OF ABBREVIATIONS THAT MAY BE USED IN THIS REVIEW REPORT

ACDP	Air Contaminant Discharge Permit
AQMA	Air Quality Management Area
Act	Federal Clean Air Act
ASTM	American Society of Testing and Materials
Btu	British thermal unit
CAM	Compliance Assurance Monitoring
CAO	Cleaner Air Oregon
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CI	Compression Ignition
CMS	Continuous Monitoring System
CO	Carbon Monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COMS	Continuous Opacity Monitoring System
CPDS	Certified Product Data Sheet
CPMS	Continuous parameter monitoring system
DEQ	Department of Environmental Quality
dscf	Dry standard cubic feet
EF	Emission factor
EPA	US Environmental Protection Agency
EU	Emissions Unit
FCAA	Federal Clean Air Act
FHAP	Federal Hazardous Air Pollutants as defined by LRAPA title 12
ft^2	Square foot
FSA	Fuel sampling and analysis
GHG	Greenhouse Gas
gr/dscf	Grain per dry standard cubic feet (1 pound = 7000 grains)
HCFC	Halogenated Chloro-Fluoro-Carbons
Hr	Hour
ID	Identification number or label
I&M	Inspection and maintenance
Lb	Pound
LRAPA	Lane Regional Air Protection Agency
MACT	Maximum Achievable Control Technology
MM	Million
MMBtu	Million British thermal units
NA	Not applicable
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen oxides
NSPS	New Source Performance Standards
NSR	New Source Review
O_2	Oxygen
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
OPR	Operation
ORS	Oregon Revised Statutes
O&M	Operation and maintenance
Pb	Lead
PCD	Pollution Control Device
PM	Particulate matter
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PM_{10}	Particulate matter less than 10 microns in size
ppm	Parts per million
PSEL	Plant Site Emission Limit
psia	pounds per square inch, actual
PTE	Potential to Emit
QIP	Quality Improvement Plan
RICE	Reciprocating Internal Combustion Engine
SACC	Semi-Annual Compliance Certification
SCEMP	Surrogate Compliance Emissions Monitoring Parameter
Scf	Standard cubic foot
SDS	Safety data sheet
SER	Significant emission rate
SERP	Source emissions reduction plan
SI	Spark Ignition
SIC	Standard Industrial Code
SIP	State Implementation Plan
SO_2	Sulfur dioxide
ST	Source test
TAC	Toxic Air Contaminant
TACT	Typically Achievable Control Technology
TBI	To be installed
TPY	Tons per year
TSM	Total selected metals
VE	Visible emissions
VMT	Vehicle miles traveled
VOC	Volatile organic compounds
VHAP	Volatile hazardous air pollutant
Year	A period consisting of any 12-

INTRODUCTION

1. Emerald People's Utility District, Short Mountain Generation Facility ("EPUD" or "the facility") is

   1.a. Information relied upon: The draft permit is based upon the Title V federal operating permit application received January 9th, 2024 (Application No. 70139) and later correspondence.

2. The facility operates under the primary Standard Industrial Classification (SIC) code of 4911 – Electrical Services and the primary North American Industry Classification System (NAICS) code of 221118 – Other Electrical Power Generation.

3. 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

4. EPUD owns and operates an electrical generation facility at Lane County Short Mountain Landfill (SML). The facility has four (4) 820 kilowatt (1,144 hp) 4-stroke lean burn internal combustion generators (engines) that combust landfill gas (LFG) collected from SML to create electricity, which is distributed directly to EPUD's power grid. Prior to combustion, LFG is sent through a treatment system consisting of PM filtration that reduces PM to 0.3 microns, an air-to-air exchanger that reduces the dew point of the LFG, and a compressor that compresses the LFG to 3 psi.

5. EPUD has a contract with SML to control SML's collected landfill gas (LFG). SML holds a Title V Operating Permit (Permit No. 204740) with LRAPA and SML is subject to 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA.

GENERAL BACKGROUND INFORMATION

6. EPUD is a Title V major source because potential emissions of CO and NO_x each exceed 100 tons per year. The facility is a major source of federal hazardous air pollutants (FHAP). For all regulated pollutants, the proposed PSELs are less than the Major NSR threshold of 250 TPY per regulated pollutant for a non-listed source.

7. The facility is located outside of the Eugene-Springfield Air Quality Management Area. The facility is located in an area that has been designated attainment/unclassified for all criteria pollutants. The facility is located within 100 kilometers of three (3) Class I air quality protection areas: Waldo Lake Wilderness, Diamond Peak Wilderness area and Three Sisters Wilderness area.

8. LRAPA has reviewed and issued the following permitting actions to this facility:

Date Approved/Valid	Permit Action Type	Description
04/01/1990	Initial ACDP	Initial ACDP for seven (7) IC Engines and one (1) Standby Gas Flare
07/15/1991	Modification	Reduced the number of engines being installed to four (4) and removed flare
08/20/93	Modification	Corrected emission factors
05/14/2001	Renewal	ACDP
12/05/01	Modification	Amended reporting requirements and corrected expiration date to 05/13/2006
4/27/2006	Renewal	Standard ACDP
12/05/2011	Renewal	Standard ACDP

Date Approved/Valid	Permit Action Type	Description
01/10/2023	Renewal and Modification	Standard ACDP that established PSELs above the 100 TPY Title V thresholds
10/23/2024	Modification to Standard ACDP	Increase to PSEL,s LFG throughput limitation, and changed emission factors for PM, PM10, PM2.5, NOX and CO
Upon Issuance	Initial Title V	Initial Title V operating permit

EMISSION UNIT AND POLLUTION CONTROL DEVICE IDENTIFICATION

9. The emission units regulated by the permit are the following:

Emission Unit ID	Emission Unit Description	Installed/Last Modified	Pollution Control Device (PCD ID)
3RC 374	Engine #1: Caterpillar 3516 820 kW (1,144 bhp) 4-stroke lean burn, spark ignition, internal combustion engine	05/1991	None
3RC 375	Engine #2: Caterpillar 3516 820 kW (1,144 bhp) 4-stroke lean burn, spark ignition, internal combustion engine	05/1991	None
4EK 29	Engine #3: Caterpillar 3516 820 kW (1,144 bhp) 4-stroke lean burn, spark ignition, internal combustion engine	03/1993	None
4EK 30	Engine #4: Caterpillar 3516 820 kW (1,144 bhp) 4-stroke lean burn, spark ignition, internal combustion engine	03/1993	None

CATEGORICALLY INSIGNIFICANT EMISSIONS

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

- Storage tanks, reservoirs, transfer and lubricating equipment used exclusively for ASTM grade distillate or residual fuels, lubricants, and hydraulic fluids

EMISSION LIMITS AND STANDARDS, TESTING, MONITORING, AND RECORDKEEPING

11. 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.

12. 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.

Nuisance, Deposition and Other Limitations

13. Under LRAPA 49-010(1), the permittee must not cause or allow air contaminants from any source subject to regulation by LRAPA to cause a nuisance. Compliance is demonstrated through documentation of all complaints received by the facility from the general public and following procedures to notify LRAPA of receipt of these complaints.

14. Under LRAPA 32-055, the permittee must not cause or permit the emission of particulate matter which is larger than 250 microns in size at sufficient duration or quantity as to create an observable deposition upon the real property of another person. Compliance is demonstrated through documentation of all complaints received by the facility from the general public and following procedures to notify LRAPA of receipt of these complaints.

15. Under LRAPA 32-090(1), the permittee must not discharge from any source whatsoever such quantities of air contaminants which cause injury or damage to any persons, the public, business or property; such determination is to be made by LRAPA. Compliance is demonstrated through documentation of all complaints received by the facility from the general public and following procedures to notify LRAPA of receipt of these complaints.

Emission Limitations and Monitoring

Emission Units 3RC 374, 3RC 375, 4EK 29, & 4EK 30: Engines

16. The engines are subject to the visible emission limitations under subsection 32-010(3). No person may emit or allow to be emitted any visible emissions that equal or exceed an average of 20 percent opacity. Compliance is demonstrated through a visible emissions survey using EPA Method 22 to be completed at least monthly.

17. The engines are subject to particulate matter emission limitations under subsection 32-015(2). For sources installed, constructed, or modified on or after June 1, 1970 but prior to April 16, 2015, the particulate matter emission limit is 0.14 grains per dry standard cubic foot. Compliance is demonstrated through a survey of visible emissions using EPA Method 22 to be completed at least monthly.

18. To ensure compliance with the PSELs, the permit limits the maximum quantity of landfill gas that can be combusted in the engines.

19. The engines must be operated and maintained to minimize air contaminant discharges in accordance with LRAPA's highest and best requirements under LRAPA 32-005. Compliance is demonstrated by preparing and updating an Operation and Maintenance plan for the engines to demonstrate that the engines are being operated and maintained in a manner to minimize pollutants under LRAPA 32-007 and emission factor verification testing for PM, NO_X, CO, VOC, and TRS.

20. The engines must achieve a methane destruction efficiency of at least 99 percent by weight pursuant to OAR 340-239-0800(6). Compliance is demonstrated through annual performance testing. If the engines remain in compliance with the methane destruction efficiency requirement after three (3) consecutive performance tests, the permittee may conduct performance tests once every three (3) years. If a subsequent performance test does not demonstrate compliance with the methane destruction efficiency requirement, the performance testing frequency must return to annual.

Best Achievable Control Technology (BACT) Determination

21. A BACT analysis was performed in February 1990 and involved identifying all available control technologies, eliminating technically infeasible options, and evaluating the remaining options based on control effectiveness, energy use, environmental impacts (waste disposal), and economic impacts (including cost per ton of pollutant captured). This process accommodated consideration of possible control trade-offs such as when a technology removes air pollutants but causes pollution in another medium like water or solid waste. BACT determinations are performed on a case-by-case basis to consider any unique conditions at a given facility.

    The four (4) options evaluated included a turbocharged engine which served as a baseline comparison, turbocharged engine with catalytic converter, a stratified turbocharged engine, and turbocharged low emission high compression engine. It was determined that the turbocharged low emission, high

compression engine was the best overall combination of energy output and exhaust emission reduction when compared to the stratified charge or the catalytic converter technology options. The catalytic converter entailed a 1% penalty in energy, primarily due to the monthly downtime for changing the converter beads. The stratified charge technology had a substantial 9% energy penalty when compared to low emission technology: beyond the normal range for these technologies. While the low emission technology option reduced nearly the same amount of emissions as the stratified charge technology option, the low emission technology option offered a 16% advantage over the stratified charge option in the incremental energy cost of reducing NOX emissions.

The low emission technology option posed no significant or unusual other media environmental impacts, but the use of catalytic converters posed significant environmental and disposal problems associated with the monthly cleaning and quarterly disposal of the converter's internal beads. The manufacturer's literature also stated that catalytic converters were not compatible with a landfill gas operation.

The low emission engine technology option was also significantly more economical in terms of cost per ton of NO_X removed from exhaust emission ($99/ton as opposed to $251/ton for the stratified charge technology and $299/ton for catalytic converter technology). Due to the substantial cost difference between the low emission technology and catalytic converters, as well as the additional environmental impacts and impact on engine performance, catalytic converters were no longer recognized as BACT in California. The stratified charge technology option offered unsubstantial reductions in levels of NO_X emissions at a disproportionately high cost as opposed to the low emission engines.

In summary, the low emission technology option offered the best combination of emission reduction levels, energy impacts, environmental impacts, and economic impacts.

During the 1990 initial evaluation of the proposed application CO and NO_X emission limits were set using an emission rate of 5.0 (lb/hour)/unit based on an 820-kilowatt (kW) unit in accordance with manufacturer's specifications.

Typically Achievable Control Technology (TACT)

22. Subsection 32-008(1) requires an existing unit at a facility prior to January 1, 1994, to meet TACT if the emission unit meets the following criteria: The emission unit is not already subject to emission standards for the regulated pollutant under title 30, title 33, title 38, or title 46 at the time TACT is required; the source is required to have a permit; the emission unit has emissions of criteria pollutants equal to or greater than five (5) tons per year of particulate or ten (10) tons per year of any gaseous pollutant; and LRAPA determines that air pollution control devices and emission reduction processes in use for the emissions do not represent TACT and that further emission control is necessary to address documented nuisance conditions, address an increase in emissions, ensure that the source is in compliance with other applicable requirements, or to protect public health or welfare or the environment.

    22.a. The engines in Emission Unit 3RC 374, 3RC 375, 4EK 29, and 4EK 30 are considered existing emission units under section 32-008 and are subject to TACT because potential emissions of CO and NO_X are each greater than ten (10) tons per year. While LRAPA has not performed a formal TACT determination for these emission units, LRAPA has determined that the results of the BACT analysis meets TACT.

EMISSION LIMITS FOR INSIGNIFICANT ACTIVITIES

23. As identified earlier in this Review Report, this facility has insignificant emissions units (IEUs) that include categorically insignificant activities and aggregate 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 and aggregate insignificant activities.

FEDERAL REQUIREMENTS

Chemical Accident Prevention Provisions

24. The Title V Operating Permit includes standard language related to 40 CFR part 68 – Chemical Accident Prevention Provisions. Should the material storage rate at this facility subject this facility to 40 CFR part 68, the facility must satisfy all the applicable risk management requirements, including the development of a risk management plan.

Stratospheric Ozone Depleting Substances

25. 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.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

40 CFR part 63 subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills

26. This standard is not applicable to EPUD because EPUD does not own or operate a Municipal Solid Waste Landfill. EPUD owns and operates an electrical generation facility which receives landfill gas produced by Short Mountain Landfill (SMF). SMF holds a TV Operating Permit (Permit No. 204740) and is subject to 40 CFR part 63 subpart AAAA.

40 CFR part 63 subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

27. This standard is not applicable to EPUD because per 40 CFR 63.6590(b)(3)(ii), a stationary RICE does not have to meet the requirements of 40 CFR part 63 subpart ZZZZ if it is an existing spark ignition 4 stroke lean burn (4SLB) stationary RICE with a site rating of more than 500 brake horsepower located at a major source of HAP emissions. EPUD's engines are 1,144 brake horsepower and are located at a major source of HAP emissions

New Source Performance Standards (NSPS)

40 CFR part 60 subpart Cf – Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

28. This standard is not applicable to EPUD because EPUD does not own or operate a Municipal Solid Waste Landfill. EPUD owns and operates an electrical generation facility which receives landfill gas produced by

Short Mountain Landfill (SMF). SMF holds a TV Operating Permit (Permit No. 204740) and is subject to 40 CFR part 60 subpart Cf.

40 CFR part 60 subpart Cc – Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

29. This standard is not applicable to EPUD because EPUD does not own or operate a Municipal Solid Waste Landfill. EPUD owns and operates an electrical generation facility which receives landfill gas produced by Short Mountain Landfill (SMF). SMF holds a TV Operating Permit (Permit No. 204740) and is subject to 40 CFR part 60 subpart Cc.

40 CFR part 60 subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

30. This standard is not applicable to EPUD's engines because the engines are not compression ignition internal combustion engines.

40 CFR part 60 subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

31. This standard is not applicable to EPUD's engines because the engines were built prior to the applicability date of July 1, 2008.

Toxics Release Inventory (TRI)

32. The Toxics Release Inventory (TRI) is federal program that tracks the management of certain toxic chemicals that may pose a threat to human health and the environment, over which LRAPA has no regulatory authority. It is a resource for learning about toxic chemical releases and pollution prevention activities reported by certain industrial facilities. Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) created the TRI Program. In general, chemicals covered by the TRI Program are those that cause:

    - Cancer or other chronic human health effects;
    - Significant adverse acute human health effects; or
    - Significant adverse environmental effects.

    There are currently over 650 chemicals covered by the TRI Program. Facilities that manufacture, process or otherwise use these chemicals in amounts above established levels must submit annual TRI reports on each chemical. NOTE: The TRI Program is a federal program over which LRAPA has no regulatory authority. LRAPA does not guarantee the accuracy of any information copied from EPA's TRI website.

    In order to report emissions to the TRI program, a facility must operate under a reportable NAICS code, meet a minimum employee threshold, and manufacture, process, or otherwise use chemicals in excess of the applicable reporting threshold for the chemical. EPUD operates under a reportable NAICS code (221118 – Other Electric Power Generation), however this covered code includes a reporting exception which limits reporting requirements to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce. Therefore, EPUD is not required to report to the TRI program.

COMPLIANCE ASSURANCE MONITORING

33. Title 40, Part 64 of the Code of Federal Regulations (CFR) contains Compliance Assurance Monitoring (CAM) requirements. CAM requirements apply to any Pollutant Specific Emissions Unit (PSEU) at a Part 70 source that meets the following criteria:

    33.a. The unit is subject to an emission limitation or standard for a regulated air pollutant;

33.b. The unit uses a control device to achieve compliance with that emission limitation or standard;
33.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 a criteria pollutant; greater than ten (10) tons per year for an individual federal HAP or 25 tons per year for the aggregate of federal HAPs; and
33.d. The exemptions in 40 CFR 64.2(b) and subsection 35-0200(2) do not apply. The exemptions include:

33.d.i. Emission limitations or standards proposed by US EPA after November 15, 1990 under section 111 (NSPS) or section 112 (NESHAPs);
33.d.ii. Stratospheric ozone protection requirements under Title VI;
33.d.iii. Acid Rain Program requirements;
33.d.iv. Emission limitations or standards or other applicable requirements that apply solely under an emissions trading program approved or promulgated by US EPA;
33.d.v. An emissions cap that meets the requirements in 40 CFR 70.4(b)(12);
33.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 title 12; and
33.d.vii. Municipally-owned backup utility emissions units meeting the requirements under 40 CFR 64.2(b)(2).

34. An emission limitation or standard is defined under the Clean Air Act and in LRAPA Title 12 as a requirement which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirement related to the operation or maintenance of a source to assure continuous emission reduction, and any design, equipment, work practice or operational standard promulgated under the Clean Air Act.

35. The following table evaluates CAM applicability for each significant emissions unit at the facility:

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
3RC 374	PM	No	No	Yes	No	NA
3RC 374	PM_{10}	No	No	Yes	No	NA
3RC 374	$PM_{2.5}$	No	No	Yes	No	NA
3RC 374	CO	No	No	No	No	NA
3RC 374	NO_X	No	No	No	No	NA
3RC 374	SO_2	No	No	No	No	NA
3RC 374	VOC	No	No	No	No	NA
3RC 374	HAP	No	No	No	No	NA
3RC 375	PM	No	No	Yes	No	NA
3RC 375	PM_{10}	No	No	Yes	No	NA
3RC 375	$PM_{2.5}$	No	No	Yes	No	NA
3RC 375	CO	No	No	No	No	NA
3RC 375	NO_X	No	No	No	No	NA
3RC 375	SO_2	No	No	No	No	NA
3RC 375	VOC	No	No	No	No	NA
3RC 375	HAP	No	No	No	No	NA
4EK 29	PM	No	No	Yes	No	NA
4EK 29	PM_{10}	No	No	Yes	No	NA
4EK 29	$PM_{2.5}$	No	No	Yes	No	NA
4EK 29	CO	No	No	No	No	NA

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
4EK 29	NO_X	No	No	No	No	NA
4EK 29	SO_2	No	No	No	No	NA
4EK 29	VOC	No	No	No	No	NA
4EK 29	HAP	No	No	No	No	NA
4EK 30	PM	No	No	Yes	No	NA
4EK 30	PM_{10}	No	No	Yes	No	NA
4EK 30	$PM_{2.5}$	No	No	Yes	No	NA
4EK 30	CO	No	No	No	No	NA
4EK 30	NO_X	No	No	No	No	NA
4EK 30	SO_2	No	No	No	No	NA
4EK 30	VOC	No	No	No	No	NA
4EK 30	HAP	No	No	No	No	NA

PLANT SITE EMISSION LIMITS

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

Pollutant	Baseline Emission Rate (TPY)	Netting Basis		Plant Site Emission Limit (PSEL)		PTE (TPY)	SER (TPY)
		Previous (TPY)	Proposed (TPY)	Previous PSEL (TPY)	Proposed PSEL (TPY)		
PM	NA	0	0	9.1	9.1	9.1	25
PM_{10}	NA	0	0	9.1	9.1	9.1	15
$PM_{2.5}$	NA	0	0	9.1	9.1	9.1	10
CO	NA	88.4	88.4	112	112	112	100
NO_X	NA	88.4	88.4	104	104	104	40
SO_2	NA	0	0	2.8	2.8	2.8	40
VOC	NA	0	0	28	28	28	40
GHG(CO_2e)	17,023	17,023	17,023	19,372	19,413	19,413	75,000

37. The baseline emission rates were established based upon the following:

37.a. The baseline emission rate (BER) is zero for all criteria pollutants because the facility was not in operation during the baseline years of 1977 or 1978.

37.b. The BER for GHG was established using data submitted with the 2010 Annual Report for combusted LFG based on the total amount of GHG at maximum capacity of all four (4) engines. Per LRAPA 42-0048(1)(b) the baseline emission rate for GHGs is any consecutive 12 calendar month period during calendar years 2000 through 2010.

38. The netting basis were established based upon the following:

38.a. The netting basis for PM, PM_{10}, SO_2, and VOC is zero. Per LRAPA 42-0046(2)(c)(A), a source's netting basis is zero for any regulated pollutant emitted from a source that first obtained a permit to construct and operate after the applicable baseline period for that regulated pollutant and has not

undergone NSR for that regulated pollutant except for PM2.5. EPUD began operation after the baseline period for PM, PM_{10}, SO_2, and VOC and has not undergone NSR for those pollutants.

38.b. The netting basis for $PM_{2.5}$ was established in accordance with LRAPA 42-0046(2)(b). For PM2.5, a source's initial netting basis is equal to the overall $PM_{2.5}$ fraction of the PM_{10} PSEL in effect on May 1, 2011 multiplied by the PM_{10} netting basis in effect on May 1, 2011. Because the PM_{10} netting basis in effect on May 1, 2011 was zero, the $PM_{2.5}$ netting basis was also zero.

38.c. A netting basis was established for CO and NO_X because these pollutants were subject to review for New Source Review (NSR) under LRAPA title 38 in 1989. Per LRAPA 42-0046(3)(e)(B), for sources that obtained a permit prior to January 11, 2018, the netting basis will be increased by any emission increases approved through the NSR regulations in title 38 in effect at the time.

38.d. The initial netting basis for GHG was set equal to the BER in accordance with LRAPA 42-0046(1)(b).

39. The PSEL's were set equal to the facility's PTE in accordance with LRAPA 42-0041(3). The facility's PTE is based upon the maximum quantity of LFG that can be combusted in the four (4) engines.

SIGNIFICANT EMISSION RATES

40. The PSEL increase over the netting basis is less than the Significant Emission Rate (SER) as defined in LRAPA title 12 for all pollutants as shown below.

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	9.1	9.1	0	0	25
PM_{10}	9.1	9.1	0	0	15
$PM_{2.5}$	9.1	9.1	0	0	10
CO	112	23.6	0	0	100
NO_X	104	15.5	0	0	40
SO_2	2.8	2.8	0	0	40
VOC	28	28	0	0	40
GHG(CO_2e)	19,413	2,390	0	0	75,000

PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

41. In 1989, EPUD proposed the phased construction of seven (7) landfill gas combustion engines and a standby flare. The installation of the first four (4) engines was subject to PSD review for NO_X and CO.

Historical background information: Memorandum from Chuck Gottfried, LRAPA, June 19, 1990

The proposed site for this facility is the Lane County Solid Waste disposal site at Short Mountain (approximately 5 miles south of Eugene/Springfield and east of Interstate 5). The site is in attainment for all criteria pollutants. However, the Eugene/Springfield area is classified as a nonattainment area for PM10, and is 'borderline' for attainment for ozone, having recorded two (2) exceedances of the standard in 1988, and having reached the standard of 235 µg/m3 in 1987. The primary pollutants of concern in citing this facility are oxides of nitrogen (NOX), which break down in the atmosphere to form ozone (O3). For that reason, a thorough analysis of NOX emissions is required to ensure that the facility does not contribute to exceedance of the ambient air quality standards.

Several regulations affect the permitting of this facility and the limits set on emissions from the site. Section 38-001 of LRAPA regulations requires that new major sources of air contaminants within Lane County must demonstrate that the proposed source can meet all requirements of LRAPA, the Oregon Department of Environmental Quality, and the U.S. Environmental Protection Agency.

Additionally, Section(1) 38 defines emission rates of specific pollutants and determines the appropriate category for a specific source. Section(2) 38-005(12) states that emissions in excess of 40 tons per year of nitrogen oxides from any source represent a "significant emission", and classifies those emitters as "major sources." According to information supplied to LRAPA with the application, the proposed facility is projected to emit, when finished, in excess of 100 tons of NOX annually.

(1) title 38
(2) subsection

42. EPUD was required to submit an ambient air impact model for NOX and CO during the initial permitting of the facility. EPUD supplied LRAPA an ambient air impact model in July 1993. LRAPA reviewed the submittal and concluded that neither the air quality standards nor the Prevention of Significant Deterioration (PSD) increments for NO_X or CO would be exceeded.

Pollutant	LRAPA 38-020(5)(B) Concentration*	Model Results
NO_X	Annual average 14 µg/m^3	Annual average 13 µg/m^3
CO	8-hour average 575 µg/m^3	8- hour average 174.8 µg/m^3

* LRAPA 38-020(5)(B) is currently LRAPA 38-0070(1)(a)(B)(i) and (ii)

UNASSIGNED EMISSIONS AND EMISSION REDUCTION CREDITS

43. The facility does not have unassigned emissions or emission reduction credits.

HAZARDOUS AIR POLLUTANTS/TOXIC AIR CONTAMINANTS

44. Under the Cleaner Air Oregon program, only existing sources that have been notified by LRAPA and new sources are required to perform risk assessments. The facility 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 2023 and regulates approximately 260 toxic air contaminants that have Risk Based Concentrations established in rule. All Federal Hazardous Air Pollutants (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/or 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.

45. The facility is a major source of Federal Hazardous Air Pollutants, (defined as a source with the potential to emit (PTE) ten or more tons per year of any individual HAP or 25 tons or more per of any combination of HAPs). The table below represents the potential emissions of FHAP from the facility, excluding potential emissions from Categorically Insignificant Activities. The highest single FHAP emitted by the facility is formaldehyde.

CAS Number	Pollutant	PTE (tpy)	CAO TAC	FHAP
71-55-6	1,1,1-Trichloroethane (methyl chloroform)	0.015	Yes	Yes
79-34-5	1,1,2,2-Tetrachloroethane	0.057	Yes	Yes
79-00-5	1,1,2-Trichloroethane (vinyl trichloride)	0.011	Yes	Yes

CAS Number	Pollutant	PTE (tpy)	CAO TAC	FHAP
75-34-3	1,1-Dichloroethane (ethylidene dichloride)	0.062	Yes	Yes
75-35-4	1,1-Dichloroethene (vinylidene chloride)	4.50E-03	Yes	Yes
78-87-5	1,2 -Dichloropropane (propylene dichloride)	0.014	Yes	Yes
526-73-8	1,2,3-Trimethylbenzene	8.14E-03	Yes	No
95-63-6	1,2,4-Trimethylbenzene	5.06E-03	Yes	No
107-06-2	1,2-Dichloroethane (ethylene dichloride)	0.018	Yes	Yes
108-67-8	1,3,5-Trimethylbenzene	0.012	Yes	No
106-99-0	1,3-Butadiene	0.094	Yes	Yes
540-84-1	2,2,4-Trimetheylpentane	0.088	Yes	Yes
91-57-6	2-Methylnaphthalene	0.012	Yes	Yes
67-63-0	2-Propanol (isopropyl alcohol)	0.700	Yes	No
83-32-9	Acenaphthene	4.42E-04	Yes	Yes
208-96-8	Acenaphthylene	1.96E-03	Yes	Yes
75-07-0	Acetaldehyde	2.958	Yes	Yes
67-64-1	Acetone	0.095	Yes	No
107-02-8	Acrolein	1.819	Yes	Yes
107-13-1	Acrylonitrile	0.078	Yes	Yes
71-43-2	Benzene	0.190	Yes	Yes
205-99-2	Benzo(b)fluoranthene	5.87E-05	Yes	Yes
192-97-2	Benzo(e)pyrene	1.47E-04	Yes	Yes
191-24-2	Benzo(g,h,i)perylene	1.46E-04	Yes	Yes
92-52-4	Biphenyl	0.075	Yes	Yes
75-27-4	Bromodichloromethane	0.119	Yes	No
75-15-0	Carbon disulfide	0.010	Yes	Yes
56-23-5	Carbon tetrachloride	0.013	Yes	Yes
463-58-1	Carbonyl sulfide	6.84E-03	Yes	Yes
108-90-7	Chlorobenzene	0.017	Yes	Yes
75-45-6	Chlorodifluoromethane	0.026	Yes	No
75-00-3	Chloroethane (ethyl chloride)	0.019	Yes	Yes
67-66-3	Chloroform	0.011	Yes	Yes
74-87-3	Chloromethane (methyl chloride)	0.014	Yes	Yes
218-01-9	Chrysene	2.45E-04	Yes	Yes
106-46-7	Dichlorobenzene	7.17E-03	Yes	Yes
75-71-8	Dichlorodifluoromethane	0.441	Yes	No
75-43-4	Dichlorofluoromethane	0.063	Yes	No
75-09-2	Dichloromethane (methylene chloride)	0.289	Yes	Yes
100-41-4	Ethylbenzene	0.128	Yes	Yes
106-93-4	Ethylene dibromide	0.016	Yes	Yes
206-44-0	Fluoranthene	3.93E-04	Yes	Yes

CAS Number	Pollutant	PTE (tpy)	CAO TAC	FHAP
86-73-7	Fluorene	2.01E-03	Yes	Yes
75-69-4	Fluorotrichloromethane (Trichlorofluoromethane)	0.024	Yes	No
50-00-0	Formaldehyde	16.4	Yes	Yes
110-54-3	Hexane	0.524	Yes	Yes
7439-97-6	Mercury	1.36E-05	Yes	Yes
67-56-1	Methanol	0.885	Yes	Yes
78-93-3	Methyl ethyl ketone	0.119	Yes	No
108-10-1	Methyl isobutyl ketone	0.044	Yes	Yes
75-09-2	Methylene Chloride (Dichloromethane)	0.289	Yes	Yes
91-20-3	Naphthalene	0.026	Yes	Yes
110-54-3	n-Hexane	0.524	Yes	Yes
401	PAH	9.52E-03	Yes	Yes
127-18-4	Perchloroethylene (tetrachloroethylene)	0.144	Yes	Yes
85-01-8	Phenanthrene	3.68E-03	Yes	Yes
108-95-2	Phenol	8.49E-03	Yes	Yes
129-00-0	Pyrene	4.81E-04	Yes	Yes
100-42-5	Styrene	8.35E-03	Yes	Yes
156-60-5	t-1,2-dichloroethene	0.064	Yes	No
108-88-3	Toluene	0.985	Yes	Yes
79-01-6	Trichloroethylene (trichloroethene)	0.086	Yes	Yes
75-01-4	Vinyl chloride	0.112	Yes	Yes
1330-20-7	Xylenes	0.364	Yes	Yes
		Total (tpy):	28.1	26.5

TITLE V PERMIT CHANGE LOG

46. As this is an initial Title V Operating Permit, there is no title V operating permit change log.

GENERAL RECORDKEEPING REQUIREMENTS

47. 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 Operation Permit must be kept at the plant site for at least five (5) years.

GENERAL REPORTING REQUIREMENTS

48. 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

49. EPUD is regularly inspected by LRAPA. The following table indicates the inspection history of this facility since the facility began operation:

Type of Inspection	Date	Results
LRAPA - Full Compliance Evaluation	08/11/1994	In compliance
LRAPA - Full Compliance Evaluation	04/15/1998	In compliance
LRAPA - Full Compliance Evaluation	11/22/1999	In compliance
LRAPA - Full Compliance Evaluation	12/04/2000	In compliance
LRAPA - Full Compliance Evaluation	05/30/2003	In compliance
LRAPA - Full Compliance Evaluation	09/27/2005	In compliance
LRAPA - Full Compliance Evaluation	07/26/2006	In compliance
LRAPA - Full Compliance Evaluation	03/17/2011	In compliance
LRAPA - Full Compliance Evaluation	06/24/2016	In compliance
LRAPA - Full Compliance Evaluation	04/21/2021 and 06/10/2021	In compliance
Source Test Observation	03/02/2022	In compliance with performance test requirements
Source Test Observation	03/24/2023	In compliance with performance test requirements
Source Test Observation	05/15/2024	In compliance with performance test requirements

SOURCE TEST RESULTS

50. EPUD tested Engine #1 (EU: 3RC 374) on March 2, 2022, and Engine #4 (EU: 4EK 29) on March 3, 2022. The engines were tested to verify emission factor for PM, NO_X, CO, VOC, total reduced sulfur (TRS) and formaldehyde. The engines were also tested to demonstrate compliance with a non-methane organic compounds (NMOC) total destruction rate by 3,000 ppmv or 98% under 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA. To demonstrate initial compliance with requirements of OAR chapter 340 division 239 the engines were tested to show compliance with the methane destruction rate of 20 ppmv or 99%. Both engines tested met the destruction efficiencies standards for NMOC and methane.

51. Since the March 2, 2022, performance test, LRAPA has determined that the facility's LFG treatment system meets EPA criteria 40 CFR part 60 subpart Cf and 40 CFR part 63 subpart AAAA, therefore EPUD is no longer required to test for NMOC destruction.

52. EPUD tested Engine #2 (EU: 3RC 375) on March 24, 2023. The engine was tested to verify emission factors for PM, NO_X, CO, VOC, total reduced sulfur (TRS) and formaldehyde. The engine was also tested to demonstrate initial compliance with the requirements of OAR chapter 340 division 239 methane destruction efficiency. The engine met the destruction efficiency standard.

53. EPUD tested Engine #3 (EU: 4EK 30) on May 15, 2024. The engine was tested to verify emission factors for PM, NO_X, CO, VOC, total reduced sulfur (TRS) and formaldehyde. The engine was also tested to demonstrate initial compliance with the requirements of OAR chapter 340 division 239 methane destruction efficiency. The engine met the destruction efficiency standard.

54. The facility is required to perform compliance testing using the test methods (or alternate teat methods approved in writing by LRAPA) at the frequency listed in the table below.

Emission Unit	Pollutant / Testing	EPA/DEQ Test Method	Limitation	SIP / CAO/ NSPS / NESHAP	Minimum Frequency
3RC 374, 3RC 375, 4EK 29, & 4EK 30	PM	DEQ Method 5	0.14 gr/dscf EF Verification	SIP	180 days from permit expiration
	NO_X	EPA Method 7E	EF Verification	SIP	180 days from permit expiration
	CO	EPA Method 10	EF Verification	SIP	180 days from permit expiration
	VOC	EPA Method 18, 25/25A or 25C	EF Verification	SIP	180 days from permit expiration
	Total Reduced Sulfur (TRS)	EPA Method 16, 16A, or 16C	EF Verification	SIP	180 days from permit expiration
	Methane Outlet Concentration	EPA Method 18, 25, or 25C	99% Destruction Efficiency or less than 3,000 ppmv, dry basis	SIP	Annual
	LFG Heat Value	EPA Method 2E and Method 25 or 25C	Gas heat value verification	SIP	180 days from permit expiration
	Opacity	EPA Method 203B	≤ 20 percent	SIP	Monthly

PUBLIC NOTICE

55. This permit was on public notice from May 19, 2025 to June 24, 2025. One written comment was submitted during the public comment period. After the public comment period ended, LRAPA responded to the comment received and has taken action to issue the permit without changes.

Public Comments Summary and LRAPA Responses

LRAPA received and responded to the following comments at the close of the public comment period:

[All public comments that were received for this project are a public record and are retained with the public permit review files. For purposes of this summary document, the public comments may have been edited to reduce length or consolidated with similar comments. Public comments that are not related to the review report or draft permit, such as those comments that are statements of fact or express an opinion, are not presented in this document, and do not require a response from LRAPA.]

Comment 1: Once commenter expressed general support for the permit.

Response 1: LRAPA appreciates the commenter's support for the proposed TV operating permit. LRAPA has not made any changes to the permit as a result of this comment.

Public Comment Receipt Log

Written comments were received from:

Sheryl Bloom Lurae8@icloud.com

EPA REVIEW

56. A proposed permit was sent to EPA on June 27, 2025 for a 45-day review period. The 45-day review period ended on August 11, 2025 without an objection from EPA to the issuance of the proposed permit.

If the EPA does not object in writing to the issuance of the proposed permit, 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.

AD
08/13/2025

EMISSION DETAIL SHEETS

PSELs:

PLANT SITE EMISSION LIMITS										
Emission Units	PM	PM_{10}	$PM_{2.5}$	CO	NO_X	SO_2	VOC	Single HAP[1]	Aggregate HAP	GHG
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
PTE for 4 Engines: 3RC 374 3RC 375 4EK 29 4EK 30	9.1	9.1	9.1	112.0	103.9	2.81	28.4	16.4	26.5	19413
PSELs	9.1	9.1	9.1	112	104	2.8	28	16.4	26.5	19413
1. Single highest HAP for the facility is Formaldehyde										

Baseline and Netting:

Pollutant	Baseline	Netting Basis		Plant Site Emission Limit (PSEL)		PTE	PSEL Increase over Netting Basis	SER
		Previous	Proposed	Previous PSEL	Proposed PSEL			
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
PM	NA	0	0	9.1	9.1	9.1	9.1	25
PM_{10}	NA	0	0	9.1	9.1	9.1	9.1	15
$PM_{2.5}$	NA	0	0	9.1	9.1	9.1	9.1	10
CO	NA	88.4	88.4	112	112	112.0	23.6	99
NO_X	NA	88.4	88.4	104	104	103.9	15.5	39
SO_2	NA	0	0	2.8	2.8	2.8	2.8	39
VOC	NA	0	0	28	28.4	28.4	28.4	39
GHG [(3)]	17,023	17023	17023	19,372	19,413	19,413	2390	74,000
Baseline emission rates (BERs) have been set at zero (0) for all criteria pollutants because the facility was not in operation during the 1978 baseline years in accordance with LRAPA 42-0048(1)(a).								
A netting basis was established for CO and NOx because these pollutants were subject to New Source Review (NSR) under LRAPA title 38.								
The netting basis for PM2.5 was established in accordance with LRAPA 42-0046(2)(b)								

Engine Calculations:

Engine Throughput		
Unit	1 engine	4 engines
cf/hr	19,800	79201
cf/day	475,205	1900822
cf/year	173,450,000	693800000
MMcf/hr	1.98E-02	7.92E-02
MMcf/day	4.75E-01	1.90E+00
MMcf/year	173	693.8

EPUD Engines: Four (4) Caterpillar 3516 IC Engine, 820 kWh					
Pollutant [1]	Emission Factor	Emission Factor Unit	Emission Factor Source	Annual Emissions lb/yr	Annual Emissions tons/year
PM	26.1	lb/MMCF	2022 and 2023 Source Test Data	18,108	9.05
PM_{10}	26.1	lb/MMCF	2022 and 2023 Source Test Data	18,108	9.05
$PM_{2.5}$	26.1	lb/MMCF	2022 and 2023 Source Test Data	18,108	9.05
CO	322.9	lb/MMCF	2022 and 2023 Source Test Data	224,028	112.01
NO_X	299.4	lb/MMCF	2022 and 2023 Source Test Data	207,724	103.86
SO_2	8.1	lb/MMCF	SML Modeling	5,620	2.81
VOC	81.9	lb/MMCF	Manufacturer's Guarantee	56,822	28.41
Total HAP	73.92	lb/MMCF	AP-42 Table 3.2-2 & Table 2.4-1	51,287	25.64
Single HAP (Formaldehyde)	47.3	lb/MMCF	2023 Source Test	32,817	16.41
GHG (CO_2e)	115.14	lb/MMBtu	40 CFR part 98, Tables C-1 and C-2	38,743,804	19,372

HAPs:

Landfill Gas (LFG) and Natural Gas (NG) Combustion HAP/TAC Emissions Summary							
VOC	CAO TAC	FHAP	Compound	CAS	LFG Combustion Emissions [1] (ton/yr)	NG Combustion Emissions [2] (ton/yr)	Total Combustion Emissions for Each Compound (ton/yr)
	TAC	HAP	1,1,1-Trichloroethane (methyl chloroform)	71-55-6	0.015	-	0.015
	TAC	HAP	1,1,2,2-Tetrachloroethane	79-34-5	0.043	0.014	0.057
	TAC	HAP	1,1,2-Trichloroethane (vinyl trichloride)	79-00-5	-	0.011	0.011
VOC	TAC	HAP	1,1-Dichloroethane (ethylidene dichloride)	75-34-3	0.054	0.008	0.062
VOC	TAC		1,2,3-Trimethylbenzene	526-73-8	-	0.008	0.008
VOC	TAC		1,2,4-Trimethylbenzene	95-63-6	-	0.005	0.005
	TAC	HAP	1,1-Dichloroethene (vinylidene chloride)	75-35-4	0.005	-	0.005
	TAC	HAP	1,2-Dichloroethane (ethylene dichloride)	107-06-2	0.009	0.008	0.018
VOC	TAC	HAP	1,2 -Dichloropropane (propylene dichloride)	78-87-5	0.005	0.010	0.014
VOC	TAC		1,3,5-Trimethylbenzene	108-67-8	-	0.012	0.012
VOC	TAC	HAP	1,3-Butadiene	106-99-0	-	0.094	0.094
	TAC	HAP	2-Methylnaphthalene	91-57-6	-	0.012	0.012
VOC	TAC	HAP	2,2,4-Trimetheylpentane	540-84-1	-	0.088	0.088
VOC	TAC		2-Propanol (isopropyl alcohol)	67-63-0	0.700	-	0.700
	TAC	HAP	Acenaphthene	83-32-9	-	4.4E-04	4.4E-04
	TAC	HAP	Acenaphthylene	208-96-8	-	0.002	0.002
VOC	TAC	HAP	Acetaldehyde	75-07-0	-	2.96	2.96
	TAC		Acetone	67-64-1	0.095	-	0.095
VOC	TAC	HAP	Acrolein	107-02-8	-	1.82	1.82
VOC	TAC	HAP	Acrylonitrile	107-13-1	0.078	-	0.078
VOC	TAC	HAP	Benzene	71-43-2	0.035	0.156	0.190
VOC	TAC	HAP	Benzo(b)fluoranthene	205-99-2	-	5.9E-05	5.9E-05
VOC	TAC	HAP	Benzo(e)pyrene	192-97-2	-	1.5E-04	1.5E-04
	TAC	HAP	Benzo(g,h,i)perylene	191-24-2	-	1.5E-04	1.5E-04
VOC	TAC	HAP	Biphenyl	92-52-4	-	0.075	0.075
VOC	TAC		Bromodichloromethane	75-27-4	0.119	-	0.119

VOC			Butane	106-97-8	0.068	0.191	0.259
VOC	TAC	HAP	Carbon disulfide	75-15-0	0.010	-	0.010
VOC	TAC	HAP	Carbon tetrachloride	56-23-5	1.4E-04	0.013	0.013
	TAC	HAP	Carbonyl sulfide	463-58-1	0.007	-	0.007
VOC	TAC	HAP	Chlorobenzene	108-90-7	0.007	0.011	0.017
	TAC		Chlorodifluoromethane	75-45-6	0.026	-	0.026
VOC	TAC	HAP	Chloroethane (ethyl chloride)	75-00-3	0.019	0.001	0.019
VOC	TAC	HAP	Chloroform	67-66-3	0.001	0.010	0.011
VOC	TAC	HAP	Chloromethane (methyl chloride)	74-87-3	0.014	-	0.014
	TAC	HAP	Chrysene	218-01-9	-	2.5E-04	2.5E-04
VOC			Cyclopentane	287-92-3	-	0.080	0.080
VOC	TAC	HAP	Dichlorobenzene	106-46-7	0.007	-	0.007
	TAC		Dichlorodifluoromethane	75-71-8	0.44	-	0.44
VOC	TAC		Dichlorofluoromethane	75-43-4	0.063	-	0.063
	TAC	HAP	Dichloromethane (methylene chloride)	75-09-2	0.282	0.007	0.289
			Dimethyl sulfide (methyl sulfide)	75-18-3	0.113	-	0.113
			Ethane	74-84-0	6.2	37.2	43.4
			Ethanol	64-17-5	0.291	-	0.291
			Ethyl mercaptan (ethanethiol)	78-08-1	0.033	-	0.033
VOC	TAC	HAP	Ethylbenzene	100-41-4	0.114	0.014	0.128
	TAC	HAP	Ethylene dibromide	106-93-4	4.4E-05	0.016	0.016
	TAC	HAP	Fluoranthene	206-44-0	-	3.9E-04	3.9E-04
	TAC	HAP	Fluorene	86-73-7	-	0.002	0.002
	TAC		Fluorotrichloromethane (Trichlorofluoromethane)	75-69-4	0.024	-	0.024
VOC	TAC	HAP	Formaldehyde[3]	50-00-0	-	16.4	16.4
VOC	TAC	HAP	Hexane	110-54-3	0.132	0.393	0.524
	TAC	HAP	Mercury	7439-97-6	1.4E-05	-	1.4E-05
			Methane	74-82-8	-	442	442
	TAC	HAP	Methanol	67-56-1	-	0.885	0.885
			Methylcyclohexane	108-87-2	-	0.435	0.435
	TAC	HAP	Methylene Chloride (Dichloromethane)	75-09-2	0.282	0.007	0.289
	TAC		Methyl ethyl ketone	78-93-3	0.119	-	0.119
VOC	TAC	HAP	Methyl isobutyl ketone	108-10-1	0.044	-	0.044
			Methyl mercaptan	74-93-1	0.028	-	0.028
VOC	TAC	HAP	n-Hexane	110-54-3	0.132	0.393	0.524
VOC			n-Nonane	111-84-2	-	0.039	0.039
VOC			n-Octane	111-65-9	-	0.124	0.124
			n-Pentane	109-66-0	0.055	0.920	0.975
	TAC	HAP	Naphthalene	91-20-3	-	0.026	0.026
	TAC	HAP	PAH	401	-	0.010	0.010
			Pentane	109-66-0	0.055	0.920	0.98
	TAC	HAP	Perchloroethylene (tetrachloroethylene)	127-18-4	0.144	-	0.144
	TAC	HAP	Phenanthrene	85-01-8	-	0.004	0.004
	TAC	HAP	Phenol	108-95-2	-	0.008	0.008
VOC			Propane	74-98-6	0.114	14.8	14.9
VOC	TAC	HAP	Pyrene	129-00-0	-	4.8E-04	4.8E-04
VOC	TAC	HAP	Styrene	100-42-5	-	0.008	0.008
	TAC		t-1,2-dichloroethene	156-60-5	0.064	-	0.064
VOC	TAC	HAP	Trichloroethylene (trichloroethene)	79-01-6	0.086	-	0.086
VOC	TAC	HAP	Toluene	108-88-3	0.84	0.144	0.99
VOC	TAC	HAP	Vinyl chloride	75-01-4	0.107	0.005	0.112
VOC	TAC	HAP	Xylenes	1330-20-7	0.298	0.065	0.364

1. LFG HAP/TAC emissions are based on AP-42 2.4 Municipal Solid Waste Landfill Table 2.4-1. Default Concentrations for LFG Constiutuents.
2. NG HAP/TAC emissions are are based on AP-42 3.2 Table 3.2-2. Uncontrolled Emission Factors for 4-Stroke Lean-Burn Engines except for Formaldehyde.
3. Formaldehyde emissions are based on 2023 Source Test results.

Total VOC	**41.01**
Total TAC	**28.13**
Total HAP	**26.46**

GHGs:

This sheet calculates greenhouse gas emissions from fuel combustion.	1) Enter the combustion emission sources at the facility (e.g. "boiler 1") in the 1st column.	2) In the 2nd column, select the fuel type used in each emissions unit. If more than one fuel type was used in a single emissions unit, you must enter that same emissions unit on multiple rows and then enter the different fuel types in each row.	3) Enter the fuel quantities in the 3rd column and specify the unit of measure in the 4th column. Emissions are then calculated in metric tons of carbon dioxide equivalent ($mtCO_2e$). *See note below in red about fuel types and units.

Enter emissions information				Convert to mmBtu				Emissions (kg/mmBtu)			CO_2 Equivalent			Anthropogenic ($mtCO_2e$)			Biogenic ($mtCO_2$)
Emissions unit[1]	Fuel Type[2]	Quantity[3]	Fuel units[3]	HHV Units	HHV Unit	HHV	mmBtu	CH_4	CO_2	N_2O	CH_4	CO_2	N_2O	CH_4	CO_2	N_2O	
LFG Engines #1-#4	Landfill Gas	693.80	Million cubic ft	693,800,000	cubic ft	0.000485	336,493	0	0	0	25	1	298	26.9	0	63.2	17,521
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0
				0	0	0	0	0	0	0	25	1	298	0	0	0	0

Anthropogenic combustion emissions ($mtCO_2e$):	90.1
Biogenic combustion emissions ($mtCO_2e$):	17,521
Total combustion emissions ($mtCO_2e$):	**17,611.3**

Conversion to short tons

Anthropogenic combustion emissions:	99
Biogenic combustion emissions:	19,314
Total combustion emissions:	**19,413**