

ENGINEERING EVALUATION
Facility ID No. 12728
Waste Management Inc.
2615 Davis Street, San Leandro, CA 94577
Application No. 31680

Background

Waste Management is applying for an Authority to Construct for the following engine:

S3, Emergency Standby Diesel Generator Set
Make: Caterpillar, Model: C4.4, Model Year: 2021
69 bhp, 4.09 gal/hr

The purpose of the engine is to ensure that the flare continues to operate during power outages.

The criteria pollutants are nitrogen oxides (NO_x), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO₂) and particulate matter (PM₁₀). All of these pollutants are briefly discussed on the District's web site at www.baaqmd.gov.

The engine meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 2 Off-road standard. The engines will burn commercially available California low sulfur diesel fuel. The sulfur content of the diesel fuel will not exceed 0.0015% by weight.

This evaluation report will discuss compliance of the proposed project with all applicable rules and regulations.

This project is in an over-burdened community as defined by Regulation 2-1-243 and a Health Risk Assessment is required pursuant to Regulation 2-5-401, so it is subject to the public notification requirements in Regulation 2-1-412.

Emissions

Annual and Daily Emissions from EPA/CARB Certified Data

Pollutant	Emission Factor	Emissions		
	(g/hp-hr)	Annual (lb/yr)	Annual (TPY)	Maximum Daily (lb/day)
NOx	3.11	23.6	0.012	11.3
NMHC	0.19	1.4	0.001	0.7
CO	1.04	7.9	0.004	3.8
PM10 (diesel particulate)	0.13	1.0	0.000	0.5
SO2	0.0055	0.0	0.000	0.0

Basis:

- Annual emissions: Reliability-related activity 50 hours for each engine
- Max daily emissions: 24-hour operation
- Fuel Rate = 4.09 gallon per hour
- Emissions from EPA Engine Family MPKXL04.4NP1
- Conservative Assumption: All PM emissions are PM2.5
- ²SO₂ emission factor from AP-42 Table 3.4-1, SO₂ (15 ppm) = 0.00809*0.0015 lb SO₂/bhp-hr

Plant Cumulative Increase

The table below summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

Plant Cumulative Emissions Increase, Post 4/5/91

Pollutant	Existing Emissions (tons/yr)	Application Emissions (tons/yr)	Cumulative Emissions (tons/yr)
NOx	5.680	0.012	5.692
POC	0	0.001	0.001
CO	19.130	0.004	19.134
PM ₁₀	1.97 ¹	0.000	1.97
PM _{2.5}	0	0.000	0
SO ₂	1.810	0.000	1.810

The emissions increase for PM10 in the District's database is 19.130 tpy. It is attributed to Application 3508. This increase is actually 1.97 tpy. It will be corrected in this action.

Health Risk Assessment (HRA)

At a maximum rate of 1.0 lb/year for reliability and maintenance, the diesel particulate emissions from the project are greater than the toxic trigger level of 0.26 lb/year. All PM₁₀/PM_{2.5} emissions are considered diesel particulate emissions. Therefore, this project requires a Health Risk Assessment.

There have been no other projects for new or modified sources at the facility for the past five years.

The facility is in an over-burdened community as defined by Regulation 2-1-243, and therefore, is subject to the project risk requirement of 6 in a million cancer threshold in Regulation 2-5-302 or the new project risk requirement of 6 in a million cancer threshold in Regulation 2-5-303.

The project is eligible for HRA streamlining because the emissions are 1.0 lb/yr for reliability and maintenance and the distance to the nearest receptor is about 600 ft.

The streamlined HRA shows that the cancer risk is less than 6 in a million. The engine meets the TBACT limit for diesel particulate of 0.15 g/bhp-hr for engines under 1000 hp. This project complies with the Regulation 2-5-302 project risk requirements.

Best Available Control Technology (BACT)

In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NO_x, CO, SO₂, or PM₁₀.

The engine can emit up to 11.3 lb NO_x/day. The emissions of POC, NPOC, CO, SO₂, PM₁₀, or PM_{2.5} are all below 10 lb/day.

BACT for this source is presented in the current BAAQMD BACT/TBACT Workbook for IC Engine – Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump, Document #96.1.3, Revision 8. dated 12/22/2020. For NO_x, CO, POC and PM₁₀, BACT(2) is the CARB ATCM standard for the respective pollutant at the applicable horsepower rating. For SO₂, BACT(2) is using fuel with sulfur content not to exceed 0.0015%, or 15 ppm. The more restrictive BACT(1) standards are not applicable to this engine because it will be limited to operation as an emergency standby engine.

The engine satisfies the current BACT(2) standard for NOx which exceeds 10 lb/day:

Pollutant	Emission Factor	BACT(2) Standard
NOx + POC	3.3 g/bhp-hr	3.5 g/bhp-hr

Offsets

Per Regulation 2-2-302, the requirement for NOx and POC offsets is triggered if the potential to emit is more than 10 tpy of NOx or POC.

Per Regulation 2-2-303, the requirement for PM and SO2 offsets is triggered if the potential to emit is more than 100 tpy of PM and SO2.

There is no offset requirement for CO.

By inspection, the potential to emit for PM and SO2 is lower than 100 tpy of each pollutant.

Following is an analysis of the potential to emit for NOx and POC.

Source		Condition#/Limit		NO _x (TPY)	POC (TPY)
1	Landfill	None	5.70E+06 tons-in-pl		3.535
-1	Landfill gas flare	162,323 mcf/yr or less	8760 hr/yr	1.489	0.218
2	Air Stripper for Leachate system	None			0.010
3	Standby Engine	22850	150 hr/yr	0.036	0.003
Total				1.522	3.564

The landfill POC emissions are based on the following:

- An assumption that 75% of the landfill gas is captured and 25% of the landfill gas is fugitive. 1.6E+08 cubic feet of the gas is captured; therefore, 5.33E+07 cubic feet of gas is assumed to be fugitive.
- The default concentration of NMOC as hexane in AP42 of 595 ppm in landfill gas.

The landfill flare POC emissions are based on database factors and the throughput. Since the landfill is closed, the landfill gas generation rate is declining. Therefore, the PTE cannot be more than actual emissions.

The landfill flare NOx emissions are based on database factors and the throughput. Since the landfill is closed, the landfill gas generation rate is declining. Therefore, the NOx PTE for the flare cannot be more than actual emissions. The heat input rate has been modified because the gas heat content is now 305,000 btu/mscf, not 482,830 btu/mscf. The NOx factor has been lowered because the database factor is based on thousand cubic feet of gas, but the RACT emission factor is 0.06 lb NOx/MMbtu.

The POC emissions for the leachate stripper are based on Application 7855.

The emission rates for the engine are based on the certified emission factors, 50 hr/yr of operation for reliability and maintenance, and 100 hr/yr based on 2019 policy memo "Calculating PTE for Emergency Generators."

The PTE for NOx and POC are both below 10 tpy, therefore no offsets are required for NOx and POC.

Statement of Compliance

California Environmental Quality Act (CEQA)

This project is ministerial under the District Regulation 2-1-311 (Permit Handbook Chapter 2.3) and is therefore not subject to CEQA review.

Public Notice, Schools and Over-Burdened Communities (Regulation 2-1-412)

This project is over 1,000 feet from the nearest K-12 school, and is therefore not subject to the public notification requirements due to proximity to a school.

This project is in an over-burdened community as defined by Regulation 2-1-243 and a Health Risk Assessment is required pursuant to Regulation 2-5-401, so it is subject to the public notification requirements in Regulation 2-1-412.

Prevention of Significant Deterioration (PSD)

This application is not part of a PSD project as defined in Regulation 2-2.

The owner/operator is expected to comply with all applicable requirements. Key requirements are listed below:

Airborne Toxic Control Measure for Stationary Compression Ignition Engines

ATCM, 5/19/2011, section 93115, title 17, CA Code of Regulations

District Rules

Regulation 6-1-303 (Ringelmann No. 2 Limitation)

Regulation 6-1-310 (Grain-loading standard)

Regulation 9-1-301 (Limitations on Ground Level Concentrations of SO₂)

Regulation 9-1-304 (Liquid and Solid Fuels)

Regulation 9-8 (NO_x and CO from Stationary Internal Combustion Engines)

Section 9-8-110.5 – Limited exemption for emergency standby engines

Section 9-8-330 – Hours of operation for emergency standby engines

Section 9-8-502 – Recordkeeping

New Source Performance Standards (NSPS)

40 CFR 60, Subpart IIII (Stationary Compression Ignition Internal Combustion Engines)

National Emissions Standards for Hazardous Air Pollutants (NESHAP)

40 CFR 63, Subpart ZZZZ (Stationary Reciprocating Internal Combustion Engines (RICE))

Permit Conditions

Permit Condition #22850:

1. The owner/operator shall not exceed 50 hours per year per engine for reliability-related testing.
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
2. The owner/operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, State or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, State or Federal emission limits is not limited.
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]
3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display

capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
- a. Hours of operation for reliability-related activities (maintenance and testing).
 - b. Hours of operation for emission testing to show compliance with emission limits.
 - c. Hours of operation (emergency).
 - d. For each emergency, the nature of the emergency condition.
 - e. Fuel usage for each engine(s).
- [Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

5. At School and Near-School Operation:
If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

The owner/operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

- a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
- b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session.

"School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property.

[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

End of Conditions

Recommendation

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct/Permit to Operate for the equipment listed below. However, the proposed source will be located within an overburdened community, which triggers the public notification requirements of District Regulation 2-1-412. After the comments are received and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct/Permit to Operate for the following source:

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Brenda Cabral, Supervising Air Quality Engineer