

ENGINEERING EVALUATION - DRAFT

Facility ID No. 203419
Blue Oak Square
2400 Willow Pass Road, Concord, CA 94519
Application No. 695981

Background

Blue Oak Square is applying for an Authority to Construct/Permit to Operate for the following equipment:

S-1 Emergency Standby Diesel Generator Set
Make: John Deere, Model: 6068HFG85A, Model Year: 2023
315 bhp, 2.10 MMBtu/hr
Permit Condition Nos. 100072 and 100073

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.

S-1 meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 3 Off-road standard. The engine 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.

Emissions

Table 1. Annual and Daily Emissions from EPA/CARB Certified Data from S-1

Pollutant	Emission Factor (g/bhp-hr)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NO _x	2.47	41.10	85.63	0.043
POC	0.08	1.37	2.85	0.001
CO	0.45	7.45	15.52	0.008
PM ₁₀ /PM _{2.5} ¹	0.07	1.24	2.59	0.001
SO ₂	N/A ²	0.00	0.00	0.000

Basis:

- Annual emissions: Reliability-related activity 50 hours for S-1
- Max daily emissions: 24-hour operation
- Emissions from EPA Engine Family PJDXL13.5103 for S-1
- ¹ Conservative Assumption: All PM₁₀ emissions are PM_{2.5}

- ² SO₂ emission factor from AP-42 Table 3.4-1, SO₂ (15 ppm) = 0.00809*0.0015 lb SO₂/bhp-hr

Plant Cumulative Increase

Table 2 summarizes the cumulative increase in criteria pollutant emissions that will result from this application.

Table 2. Plant Cumulative Emissions Increase, Post 4/5/91

Pollutant	Existing Emissions Post 4/5/91 (tons/yr)	Application Emissions (tons/yr)	Cumulative Emissions (tons/yr)
NO _x	0.000	0.043	0.043
POC	0.000	0.001	0.001
CO	0.000	0.008	0.008
PM ₁₀ /PM _{2.5}	0.000	0.001	0.001
SO ₂	0.000	0.000	0.000

Health Risk Assessment (HRA)

Regulation 2, Rule 5 is the Air District’s new source review rule for toxic air contaminants (TACs). It establishes health risk assessment (HRA) requirements and health risk limits for proposed new or modified sources. As defined in Regulation 2-5-216, a “project” includes all new or modified sources in an application and any related applications at a facility that have been permitted within the last five years. This project does not have any related applications and includes the proposed source, S-1, in this application.

If a proposed project has toxic emissions that exceed an acute or chronic trigger level listed in Table 2-5-1 “Toxic Air Contaminant Trigger Levels” of this regulation, the project is required to have an HRA pursuant to Regulation 2-5-401. As explained below, this project has TAC emissions that exceed one or more Table 2-5-1 trigger levels; therefore, an HRA is required for this application.

Diesel exhaust particulate matter, or diesel PM, is a toxic air contaminant. It is used as a surrogate to represent all toxic air contaminant emissions from diesel-fueled compression-ignition internal combustion engines. All PM₁₀ emissions from S-1 are considered diesel exhaust particulate matter emissions. From Table 1, PM₁₀ and diesel PM emissions are 2.59 lbs/year. The diesel PM emissions from the project are greater than the toxic trigger level of 0.26 lb/year. This application did not qualify for HRA streamlining because receptors are located less than 100 feet from the proposed engine location. Therefore, a refined HRA is required.

HRA Results

This analysis estimates the incremental health risk resulting from TAC emissions from non-emergency operation of a standby generator diesel engine at this facility. Results from this HRA indicate that the maximum project cancer risk is estimated at 0.66 in a million, and the maximum project chronic hazard index is estimated at 0.00018. The HRA results

for the highest impacted receptors are summarized in Table 3. A detailed HRA report is attached.

Table 3. Health Risk Assessment Results

Maximally Exposed Receptor	Maximum Cancer Risk (chances in a million)	Maximum Chronic Hazard Index
Residential	0.66	0.00018
Off-site worker	0.13	0.00010
Student (Crossroads High School)	0.049	0.000026
Student (Olympic High School)	0.070	0.000038

TBACT

In accordance with the District’s Regulation 2-5-301, best available control technology for toxic emissions, or TBACT, is required for a source if the estimated source risk exceeds a cancer risk of 1.0 in a million or a chronic HI of 0.20. This source does not require TBACT because the estimated source risk does not exceed a cancer risk of 1.0 in a million, and chronic hazard index of 0.20.

BACT and TBACT determinations for compression ignition engines with a rated capacity between 50-1000 bhp are described in BAAQMD BACT/TBACT Workbook for IC Engines – Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump, Document #96.1.3, Revision 8, dated 12/22/2020 (see Attachment 1). Even though TBACT is not required, this proposed engine complies with TBACT by having a certified PM emission rate that is less than or equal to 0.15 g/bhp-hour. The certified PM emission rate for this engine is 0.07 g/bhp-hour.

Project Risk Limits

This project is subject to a project cancer risk limit of 10 in a million, because this facility is not located within an overburdened community. All projects, regardless of location, are subject to non-cancer chronic hazard index of 1.0 and an acute hazard index of 1.0. However, the acute hazard index is not applicable to this project, because diesel particulate matter does not have any acute health impacts. Since the proposed engine, operating at 50 hours/year for reliability related testing, does not trigger TBACT, and the estimated project cancer risk does not exceed 10 in a million and the chronic hazard index does not exceed 1.0, this project complies with the District’s Regulation 2-5-302 project risk requirements. No additional operating hour restrictions were necessary for this project.

Best Available Control Technology (BACT)

Regulation 2, Rule 2 contains the Air District’s new source review requirements for criteria pollutant emissions from new or modified sources. 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, NOx, CO, SO₂, or PM₁₀. As shown in Table 1, maximum daily NOx emissions from S-1 will exceed 10 pounds per day and will trigger

BACT for these pollutants. Emissions of CO, POC, PM₁₀/PM_{2.5}, and SO₂ from S-1 are not subject to BACT.

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. BACT for S-1 cannot be any less stringent than the BACT(2)/Achieved in Practice emission standards is this BACT guideline.

For NO_x, BACT(2) is the CARB ATCM standard for the respective pollutant at the applicable horsepower rating. There are no more restrictive BACT(1) standards specified in the BACT guideline for NO_x emissions from diesel engines between 300-600 bhp. Further reductions in NO_x emission rates would require add-on controls that are not expected to be cost-effective for this engine because it will be limited to operation as an emergency standby engine.

S-1 satisfies BACT by meeting the current BACT(2) standards for the following pollutants:

Pollutant	Emission Factor	BACT(2) Standard
NO _x	2.47 g/bhp-hr	2.85 g/bhp-hr

* The standard is expressed as 3.0 g/bhp of NMHC+NO_x. NO_x is estimated to be 95% of the combined standard (3.0*0.95 = 2.85 g/bhp-hr)

Offsets

Offset must be provided for any new or modified source at a facility that will have the potential to emit more than 10 tons per year of NO_x or POC, as specified in Regulation 2-2-302; 100 tons per year or more of PM_{2.5}, PM₁₀ or sulfur dioxide, as specified in Regulation 2-2-303.

Table 4. Potential to Emit for FID 203395

Pollutant	Existing Annual Emissions (TPY)	Application Annual Emissions* (TPY)	Facility Annual Emissions (TPY) *	Offset Requirement (TPY)	Offset Required
NO _x	0	0.128	0.128	>10	N
POC	0	0.004	0.004	>10	N
CO	0	0.023	0.023	-	N
PM ₁₀ /PM _{2.5} ¹	0	0.004	0.004	≥100	N
SO ₂	0	0.000	0.000	≥100	N

*Annual emissions: Reliability-related activity of 50 hours and emergency operation of 100 hours for S-1.

Since the facility’s potential to emit is below the offsets trigger levels specified in Regulation 2-2, offsets are not required.

Statement of Compliance

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

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

California Environmental Quality Act (CEQA)

On October 2, 2007, the City of Concord adopted the 2030 Concord Urban Area General Plan and concurrently certified the Final Environmental Impact Report (EIR). On July 24, 2012, the City of Concord certified the Supplemental Environmental Impact Report to the 2030 Concord General Plan EIR for the Concord Development Code Project on July 24, 2012 (“SEIR”). On June 25, 2014, the City Council approved the Addendum to the Final SEIR to the 2030 Concord General Plan EIR for the Concord Development Code Project, and adopted the Downtown Concord Specific Plan General Plan Amendment as Volume IV of the Concord 2030 General Plan. On December 15, 2016, Planning Commission Resolution #16-33 PC approved to construct/allow a 181-unit multi-family residential apartment project at 2400 Willow Pass Road (“Project”). Pursuant to the provisions of the CEQA of 1970, as amended, an Initial Study was prepared for the project which concluded that the Project is consistent with the community plan, general plan or zoning for the City for which environmental review was previously certified, and there are no project-specific significant effects which are peculiar to the project or its site. The Air District concurs that no significant air quality impacts are expected from this project. Accordingly, no further environmental review under CEQA Guidelines Section 15183 is required.

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)*)

Prevention of Significant Deterioration (PSD)

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

Public Notification (Regulation 2-1-412)

This project is not located within an overburdened community. However, there are two K-12 schools with more than 12 children located within 1,000 feet of this facility.

1. Crossroads High School, located at Address: 2701 Willow Pass Road, Concord, CA 94520
2. Olympic Continuation High School, located at Address: 2730 Salvio Street, Concord, CA 94520

It is therefore subject to the public notification requirements under the California Health & Safety Code and District Regulation 2, Rule 1, Section 412 due to the increase in the emissions from this project.

Before this project can be approved, a 30-day public comment period will be held. Notice describing the project and announcing the public comment period will be mailed to the parents of students attending the above school(s) and residential and business neighbors within 1,000 feet of the facility. The cost of preparing and distributing this notice will be paid by the applicant. All comments received will be summarized in this evaluation report.

Permit Conditions

Permit Condition #100072 for S-1

1. The owner or 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]
2. 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]
3. 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. I For each emergency, the nature of the emergency condition. Fuel usage for each engine(s).
[Basis: Title 17, California Code of Regulations, section 93115, ATCM for Stationary CI Engines]

4. 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 or 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, playground, 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]

Permit Condition #100073 for S-1

The owner/operator shall not exceed the following limits per year per engine for reliability-related activities:

- 50 Hours of Diesel fuel (Diesel fuel)
[Basis: Cumulative Increase; Regulation 2-5; 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 1,000 feet of a school, 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.

S-1 Emergency Standby Diesel Generator Set
Make: John Deere, Model: 6068HFG85A, Model Year: 2023
315 bhp, 2.10 MMBtu/hr
Permit Condition Nos. 100072 and 100073

Prepared By: Leo Ly, Air Quality Engineer

Date: 04/17/2024

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Attachment 1

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Best Available Control Technology (BACT) Guideline
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Source Category

Source:	IC Engine-Compression Ignition: Stationary Emergency, non-Agricultural, non-direct drive fire pump	Revision:	8
		Document #:	96.1.3
Class:	> 50 BHP and < 1000 BHP Output	Date:	12/22/2020*

Determination

Pollutant	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice 3. TBACT	TYPICAL TECHNOLOGY
POC (NMHC)	1. n/s ^c 2. CARB ATCM standard ^a for POC at applicable horsepower rating (see attached Table 1).	1. n/s ^c 2. Any engine certified or verified to achieve the applicable standard. ^a
NOx	1. n/s ^c 2. CARB ATCM standard ^a for NOx at applicable horsepower rating (see attached Table 1).	1. n/s ^c 2. Any engine certified or verified to achieve the applicable standard. ^a
SO₂	1. n/s ^c 2. Fuel sulfur content not to exceed 0.0015% (wt) or 15 ppm (wt).	1. n/s ^c 2. CARB Diesel Fuel (Ultra Low Sulfur Diesel)
CO	1. n/s ^c 2. CARB ATCM standard ^a for CO at the applicable horsepower rating (see attached Table 1).	1. n/s ^c 2. Any engine certified or verified to achieve the applicable standard. ^a
PM₁₀	1. n/s ^c 2. 0.15 g/bhp-hr 3. 0.15 g/bhp-hr	1. n/s ^c 2. Any engine or technology demonstrated, certified or verified to achieve the applicable standard. 3. Any engine or technology demonstrated, certified or verified to achieve the applicable standard.
NPOC	1. n/s 2. n/s	1. n/s 2. n/s

* Applies to open permit applications with a complete date on or after 1/1/2020.

References

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| a. | ATCM standard (listed below): Where NMHC + NOx is listed (with no individual standards for NOx or NMHC) as the standard, the portions may be considered 95% NOx and 5% NMHC. For the purposes of determining BACT NMHC = POC. Any engine which has been certified or demonstrated to meet the current year tier standard may be considered compliant with the certified emission standard for that pollutant. |
| b. | Deleted (no longer applies). |
| c. | Cost- effectiveness analysis must be based on lesser of 50 hr/yr or non-emergency operation as limited by District health risk screen analysis. |

Table 1: BACT 2 Emission Limits based on CARB ATCM

Emissions Standards for Stationary Emergency Standby Diesel-Fueled CI Engines ≥ 50 BHP g/Kw-hr (g/bhp-hr)			
Maximum Engine Power	PM	NMHC+NOx	CO
37 \leq KW < 56 (50 < HP < 75)	0.20 (0.15)	4.7 (3.5)	5.0 (3.7)
56 \leq KW < 75 (75 \leq HP < 100)	0.20 (0.15)	4.7 (3.5)	5.0 (3.7)
75 \leq KW < 130 (100 < HP < 175)	0.20 (0.15)	4.0 (3.0)	5.0 (3.7)
130 \leq KW < 225 (175 \leq HP < 300)	0.20 (0.15)	4.0 (3.0)	3.5 (2.6)
225 \leq KW < 450 (300 < HP < 600)	0.20 (0.15)	4.0 (3.0)	3.5 (2.6)
450 \leq KW \leq 560 (600 < HP < 750)	0.20 (0.15)	4.0 (3.0)	3.5 (2.6)
560 < KW < 750 (750 < HP < 1000)	0.20 (0.15)	6.4 (4.8)	3.5 (2.6)