DRAFT ENGINEERING EVALUATION REPORT
DIGITAL 720 2ND LLC
PLANT #20586
APPLICATION #31912

BACKGROUND

Digital 720 2nd LLC (Applicant) currently operates at 720 2nd Street in Oakland, California. Currently, the Applicant is applying for an Authority to Construct and Permit to Operate one (1) new emergency fire pump. The proposed source requires an Authority to Construct and a Permit to Operate per BAAQMD Regulation 2-1-301 and Regulation 2-1-302, respectively. The source covered by this application for an authority to construct/permit to operate is identified as follows:

S-9 Emergency Standby Diesel Fire Pump Engine
Make: John Deere, Model: 4045 Series Power Tech E, Model Year: 2022, EPA Engine Family: NJDXL04.5119
144 bhp

EMISSIONS SUMMARY

Criteria pollutant emissions from the diesel engine that is the subject of this application are outlined below.

Annual Emissions:

Source	Hrs/year	Output rating for full-load, standby operation (Bhp)	Engine Displacement	Rating, Constant Speed (RPM)	EPA Engine Family
S-9	34	144	4.53 L ÷ 4 = 1.14 L/cylinder	1800	NJDXL04.5119

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Table 1A. Emission Factor Assumptions

Pollutant	Emission Factor[1] (g/kW-hr)	Emission Factor[2] (g/bhp-hr)
NOx	3.47	2.59
CO	1.30	0.97
POC	0.18	0.13
PM_{10}	0.17	0.13

References:

1. *US EPA Annual Certification Database for Vehicles, Engines, and Equipment: Nonroad Compression Ignition Engines, NRCI Certification Data (Model Years: 2011-Present.xlsx), Certification Level Steady-State Discrete Modal Test Results. https://www.epa.gov/compliance-and-fuel-economy-data/annual-certification-data-vehicles-engines-and-equipment*
2. *Assume 1.341 hp/kw conversion factor.*

- The emission factor for SO_2 is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors, which is based on full conversion of fuel sulfur to SO_2 and which will therefore be considered applicable to any diesel engine (sulfur content will be assumed to be the California limit of 0.0015 wt% sulfur) is calculated as follows:

SO_2: 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.0015% S) (454 g/lb)
= **0.006 g/hp-hr**

Table 1B. Calculated Annual Emissions

NOx	=	(	2.59	g/hp-hr)	(	144	hp)	(	34	hr/yr)	(lb/454g)	=	27.931	lb/yr	=	0.014 TPY
CO	=	(	0.97	g/hp-hr)	(	144	hp)	(	34	hr/yr)	(lb/454g)	=	10.461	lb/yr	=	0.005 TPY
POC	=	(	0.14	g/hp-hr)	(	144	hp)	(	34	hr/yr)	(lb/454g)	=	1.510	lb/yr	=	0.001 TPY
PM_{10}	=	(	0.130	g/hp-hr)	(	144	hp)	(	34	hr/yr)	(lb/454g)	=	1.402	lb/yr	=	0.001 TPY
SO_2	=	(	0.006	g/hp-hr)	(	144	hp)	(	34	hr/yr)	(lb/454g)	=	0.065	lb/yr	=	0.000 TPY

Maximum Daily Emissions:

Daily emissions are calculated to establish whether a source triggers the requirement for Best Available Control Technology (BACT) (10 lb/highest day total source emissions for any BACT pollutant). A full 24-hour day is assumed since no daily limits are imposed on intermittent and unexpected operations. The table below shows the calculated maximum daily emissions for each new source proposed in this application.

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Table 1C. Calculated Daily Emissions

NOx	=	(	2.59	g/hp-hr)	(	144	hp)	(	24	hr/day)	(lb/454g)	=	19.716 lb/day
CO	=	(	0.97	g/hp-hr)	(	144	hp)	(	24	hr/day)	(lb/454g)	=	7.384 lb/day
POC	=	(	0.14	g/hp-hr)	(	144	hp)	(	24	hr/day)	(lb/454g)	=	1.066 lb/day
PM_{10}	=	(	0.130	g/hp-hr)	(	144	hp)	(	24	hr/day)	(lb/454g)	=	0.990 lb/day
SO_2	=	(	0.006	g/hp-hr)	(	144	hp)	(	24	hr/day)	(lb/454g)	=	0.046 lb/day

PLANT CUMULATIVE INCREASE

Cumulative Increase is defined as the sum of all emissions increases authorized by authorities to construct and permits to operate issued to a facility since the applicable cumulative increase baseline date, which is April 5, 1991, for POC, NOx, SO_2, PM_{10}, and CO, and August 31, 2016, for $PM_{2.5}$. The cumulative increase for the facility is summarized in the table below.

Table 2. Calculated Plant Cumulative Increase (tons/year)

Pollutant	Current	Application Increase	New Total
NOx	6.239	0.014	6.253
CO	0.640	0.005	0.645
POC	0.263	0.001	0.264
PM_{10}	0.038	0.001	0.039
$PM_{2.5}$	0.000	0.001	0.001
SO_2	0.282	0.000	0.282

STATEMENT OF COMPLIANCE

Regulation 2 - Permits, Rule 1 – General Requirements

CEQA (Section 2-1-311)

The project is ministerial under the BAAQMD's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors as specified in the BAAQMD Engineering Division Permit Handbook Chapter 2.3.1 (Stationary Diesel Engines) and therefore is not discretionary as defined by CEQA.

Public Notice (Section 2-1-412)

A new or modified source located (i) within 1,000 feet of the outer boundary of a K-12 school site which results in the increase in emissions of a toxic air contaminant in Table 2-5-1 of *Regulation 2, Rule 5 New Source Review of Toxic Air Contaminants* or (ii) within an Overburdened Community as defined in Regulation 2-1-243 that requires a Health Risk Assessment pursuant to Regulation 2-5-401 shall prepare and distribute a public notice in

accordance with subsections 412.1 and 412.2 of *Regulation 2, Rule 1 General Requirements*.
> The proposed source is located within an Overburdened Community. Therefore, a public notification pursuant to Reg. 2-1-412 is required.

Regulation 2 - Permits, Rule 2 – New Source Review

In accordance with District Policy[1], the standard potential to emit for emergency engines is based on 150 hr/yr operation (50 hr/yr non-emergency plus 100 hr/yr emergency purposes).

The assumption of 100 hours per year of emergency operation is used to determine the applicability of certain District permitting regulations, such as New Source Review and Title V Major Facility Review. The District Policy is not used to determine the quantity of emission offsets required for a project that triggers New Source Review or for PSD. It is also not applicable for purposes of the Toxics New Source Review requirements of District Reg. 2-5 (per Regulation 2-5-111).

Therefore, the potential to emit for the emergency engine in this application is based on 150 hr/yr/engine operation (50 hr/yr non-emergency plus 100 hr/yr emergency purposes).

The table below shows the calculated facility-wide potential to emit based on District Policy. The appendix to this application shows the back-up calculation for current PTE.

Table 3. Facility-Wide Potential to Emit
(Per BAAQMD Policy: Calculating PTE for Emergency Backup Power Generators[1])

Pollutant	Current	Application Increase	New Total
NOx	18.717	0.055	18.772
CO	1.920	0.021	1.941
POC	0.789	0.003	0.792
PM_{10}	0.114	0.003	0.117
$PM_{2.5}$	0.000	0.003	0.003
SO_2	0.846	0.000	0.846

[1] BAAQMD Policy: Calculating Potential to Emit for Emergency Backup Power Generators. Approval date June 3, 2019. (Referred to as "District Policy" in this engineering evaluation).

Best Available Control Technology Requirement (Section 2-2-301)

Any new source is required to use Best Available Control Technology (BACT) to control emissions of any BAAQMD BACT pollutants [precursor organic compounds (POC), non-precursor organic compounds (NPOC), oxides of nitrogen (NO_x), sulfur dioxide (SO2), PM10, PM2.5, and/or carbon monoxide (CO)] that have the potential to emit 10 or more pounds each on any day.

> Based on the emission calculations presented in Table 1C, BACT is triggered for NOx since the maximum daily emissions are each greater than 10 lb/day for this pollutants.

BACT is defined as the most stringent emissions limitation, control device, or control technique that (i) has been achieved in practice at other similar sources and/or (ii) is technologically feasible and cost-effective. See Reg. 2-2-202. To determine what level of control constitutes BACT for the emergency backup diesel engine, the BAAQMD reviewed available control technologies that can be effective at controlling NOx from this source.

Control Technology Review

Several control technologies can reduce NOx emissions from emergency backup diesel engines. These technologies have been divided into three categories: Clean Fuels, Combustion Technologies, and Post-Combustion Technologies.

Clean Fuel Technology

The use of diesel fuel with a low nitrogen content reduces the amount of NOx formed during combustion. The less nitrogen available in the fuel, the less can be converted to NOx upon combustion. Diesel fuel producers are not required to remove nitrogen from the fuel specifically for NOx reduction purposes. But they are required to remove sulfur to comply with regulatory mandates, and the hydro-treating technique they use to remove the sulfur also removes most of the nitrogen. As a result, using ultra-low-sulfur diesel fuel will provide benefits in reducing NOx emissions as well as reducing sulfur dioxide emissions. Ultra-low sulfur diesel is required to be used by the California Air Resources Board (CARB) and is therefore achieved in practice for this engine.

Combustion Technologies

NOx emissions can be minimized by optimizing the engine's combustion process using techniques such as injection timing retard, preignition chamber combustion, air-to-fuel ratio adjustments, and derating. These combustion characteristics are determined by the design of the engine, which is dictated by the manufacturer and cannot be controlled by the end user. The end user can reduce emissions by using the cleanest engine available, however. Engines are certified to meet progressively more stringent emissions performance standards using EPA's "Tier" system, with higher-tier engines representing more stringent levels of emissions control. For the size of engine that will be used for this project, the most stringent level of emissions control that can be achieved using combustion controls is Tier 3.[2] The use of Tier 3 engines is achieved in practice.

[2] EPA's diesel emission tiers range from Tier 0 through Tier 4. The Tier 4 standards require catalytic control devices, which are addressed below. For diesel engines between 100 and 175 horsepower, Tier 3 standards are the most stringent set of standards which do not require catalytic control devices. The next most stringent

Post-Combustion Technologies
Currently, the most effective and prevalent post combustion technologies used to abate NOx rely on the use of catalysts. Catalytic technology can come in the form of a selective catalytic reduction unit, lean-NOx catalyst, or NOx adsorber. The catalyst is used to lower the heat of reaction that is required for the breakdown and/or conversion of the target pollutants. With emergency standby generators, the catalyst would not reach its effective temperature during short-duration operations associated with periodic testing and maintenance, which is primarily how this engine will be operated.

BACT Analysis
The first step in the BACT analysis is to determine what level of emissions control has been achieved in practice for the source at issue. When considering post-combustion technologies that have been achieved in practice for smaller emergency backup engines like S-9, the BAAQMD consulted BACT clearinghouses and guidelines published by US EPA, CARB, and other Air Districts. We are unaware of any engines in this size range that are operating under any more stringent standards than Tier 3 that would qualify as achieved in practice BACT under our BAAQMD program. Because S-9 is certified to achieve Tier 3 standards without post-combustion control, post-combustion catalytic control technologies are not considered BACT for S-9.

The second step in the BACT analysis is to determine whether there is any more stringent level of control, beyond what has been achieved in practice, that is technologically feasible and cost-effective for the source under review. The BAAQMD therefore considered whether catalytic control devices would be technologically feasible and cost-effective for S-9.

Catalytic control devices only become effective when the engine is operated for longer periods in the case of a power outage. Emergency operation will be infrequent, however, and it is not expected to last for a significant amount of time when it does occur. As a result, the emission reduction benefit from having a catalytic control device would be less than optimal and would not be cost-effective under the BAAQMD's BACT regulations given the costs involved. Studies that have evaluated the additional costs and emission reduction benefits that would be involved in implementing catalytic control technologies on emergency backup engines have shown that the cost would be in the range of $68,000 to $682,000 per ton of emission reduction benefit.[3] This cost per ton greatly exceeds the

set of standards is Tier 4, which requires catalytic control devices. See California Air Resources Board, Non-Road Diesel Engine Certification Tier Chart, available at: https://ww2.arb.ca.gov/resources/documents/non-road-diesel-engine-certification-tier-chart-pdf. The most stringent tier that can be achieved with combustion controls only is therefore Tier 3 for this size category.

[3] See Sacramento Metropolitan Air Quality Management District BACT Determination No. 281 (June 4, 2021), available at: http://www.airquality.org/StationarySources/Documents/IC%20Engine%20Compression%20Standby%20Diesel%20Fired%20BACT%20281.pdf; California Air Resources Board, Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed Amendments to the Airborne Toxic control Measure for Stationary Compression Ignition Engines (Sept. 2010), available at

BAAQMD's BACT cost-effectiveness threshold of $17,500 per ton. Catalytic control devices are therefore not considered technologically feasible and cost-effective for this source.

From the analysis of the various technologies that could be implemented to reduce NOx, the BAAQMD has concluded that the use of ultra-low sulfur diesel fuel and an EPA Tier 3 certified engine are achieved-in-practice control technologies. These control technologies are therefore required as BACT for S-9. S-9 is certified to meet the EPA Tier 3 emissions standard, and the applicant will be required by CARB regulations to use ultra-low-sulfur diesel fuel. Therefore, S-9 complies with the BACT requirements under Regulation 2-2-301 for all applicable pollutants.

According to the emission data submitted to EPA for the S-9 engine family, the NOx and CO emission rates are below the applicable BACT emission limits.

Table 4A. BACT Analysis Summary: S-9

BACT Pollutant Triggered	BACT Limit Tier 3 for Engines 100<HP<175 (g/bhp-hr)	S-9 Emission Rates (g/bhp-hr)
NOx	2.85	2.59

Offset Requirements, POC and NO_x (Section 2-2-302)

This section establishes emission offset requirements for POC and NO_x at facilities that will have the potential to emit more than 10 tons per year of POC or NO_x. If the facility will have the potential to emit more than 10 tons per year but less than 35 tons per year of NO_x or POC after the new or modified source is constructed, offsets must be provided at a 1:1 ratio for any un-offset cumulative increase in emissions at the facility. These offsets shall be provided by the District's Small Facility Banking Account (SFBA) unless the applicant owns offsets. If the facility will have the potential to emit more than 35 tons per year of NOx or POC after the new or modified source is constructed, offsets must be provided by the facility at a 1.15:1 ratio for any un-offset cumulative increase in emissions at the facility.

> The facility has the potential to emit (PTE) 18.772 tons per year (tpy) of NO_x and 1.941 tpy of POC based on District Policy (Table 3). Offsets are not triggered for POC. Because PTE for NOx is between 10 and 35 tpy, appropriate offsets are determined by the PTE from permitted emissions only. The facility has a permitted PTE of 6.239 tpy NOx. Therefore, offsets are not triggered.

Offset Requirement, $PM_{2.5}$, PM_{10} and Sulfur Dioxide (Section 2-2-303)

This section establishes emission offset requirements for $PM_{2.5}$, PM_{10} and Sulfur Dioxide from new or modified sources located at a facility with the potential to emit 100 tons per year of $PM_{2.5}$, PM_{10} or Sulfur Dioxide.

www.arb.ca.gov/regact/2010/atcm2010/atcmisor.pdf.

> Since the potential to emit $PM_{2.5}$, PM_{10} or Sulfur Dioxide at the facility where this engine operates are each below 100 tons per year, the application is not subject to the offset requirements of *Regulation 2-2-303*.

Prevention of Significant Deterioration (PSD) (Sections 2-2-304 through 307)

These sections establish standards for PSD BACT requirements, PSD source impact analysis requirements, and PSD additional impacts analysis requirements.

> This facility will not emit 100 tons or more per year of any PSD pollutant and, therefore, is not a major PSD facility and is not subject to any of the PSD requirements in Regulations 2-2-304 through 2-2-307 per Regulation 2-2-224.

NAAQS Protection Requirement (Section 2-2-308)

Per Regulation 2-2-308, if a project will result in a significant net increase in emissions of CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, or lead, the applicant must demonstrate that the emissions will not cause or contribute to any exceedance of the National Ambient Air Quality Standards for these pollutants.

> This project will not involve any significant net emissions increases, as defined in Regulation 2-2-227.2.

Publication of Notice and Opportunity for Public Comment (Section 2-2-404)

If an application involves a major facility, a PSD project, or an increase in CO, NOx, SO_2, PM_{10}, $PM_{2.5}$, VOC, or lead in an amount that is significant as defined in Regulation 2-2-227.2, the BAAQMD must prepare and distribute a public notice and provide an opportunity for public comment in accordance with Regulation 2-2-404 (Publication of Notice and Opportunity for Public Comment).

> This application does not involve a major facility or PSD project, and it will not increase emissions above any of the significance levels defined in Regulation 2-2-227.2.

Regulation 2- Permits, Rule 5 New Source Review of Toxic Air Contaminants

This rule requires that any new or modified source of toxic air contaminant (TAC) emissions subject to Authority to Construct or Permit to Operate requirements shall be evaluated for potential public exposure and health risk and meet the applicable standards and administrative requirements, as specified in Sections 300 and 400, respectively.

> The proposed engine will emit diesel exhaust particulate matter, which is a TAC under BAAQMD Regulations. BAAQMD Regulation 2, Rule 5 specifies that diesel exhaust particulate matter will be used as a surrogate for all TAC emissions from diesel-fueled compression-ignition internal combustion engines, as this is the principal driver of the health risk associated with this type of equipment. The calculated emissions increase of diesel exhaust particulate matter associated with the project are summarized in the table below. The project does not include any related NSR applications for new or modified sources permitted within the previous five-year period (per BAAQMD Reg 2-5-216).

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Table 5. Project Diesel Exhaust Particulate Matter Emissions

Source	PM Emission Factor (g/bhp-hr)	Horsepower	Annual Usage (hours/year)	Diesel PM Emissions (lb/year)
S-9 (A/N 31912)	0.13	144	34	1.40
			Total	**1.40**
			HRA Trigger (Chronic)	***0.26***

Regulation 2-5-402 requires a Health Risk Assessment (HRA) if TAC emissions exceed the screening thresholds set forth in Table 2-5-1 in Regulation 2, Rule 5. For this project, emissions of diesel particulate matter exceeds the Table 2-5-1 screening thresholds.

The BAAQMD therefore undertook a refined HRA[4] to evaluate the potential chronic carcinogenic and non-carcinogenic health risks from diesel emissions from this project. The HRA evaluated risks to workers and to residents in the vicinity of the project.

The Health Risk Assessment evaluated chronic health risks from the diesel engine. The evaluation assumed that the engine would operate up to the maximum 34 hours per year allowed for testing and maintenance purposes. Emissions from emergency operations were not included because they are exempt from Regulation 2, Rule 5 under Section 2-5-111.

For the project, the HRA analysis estimated the health risk resulting from TAC emissions from the non-emergency operation of the standby emergency diesel generator engine listed in Table 3 at this facility. Results from the HRA indicate that the maximum project cancer risk is **0.65 in a million** and the project maximum chronic hazard index is **0.00028**. In accordance with the District's Regulation 2-5-301, this source does not require TBACT because the estimated source cancer risk and hazard index are less than 1.0 in a million and 0.20, respectively. Since the estimated project cancer risk does not exceed 6 in a million and project hazard index does not exceed 1.0, this project complies with the District's Regulation 2-5-302 project risk requirements.

Compliance with Regulation 2-5 is therefore satisfied.

Regulation 2- Permits, Rule 6 Major Facility Review

Regulation 2, Rule 6 implements the operating permit requirements of Title V of the federal Clean Air Act as amended in 1990. The rule applies to major facilities, Phase II acid rain facilities, subject solid waste incinerator facilities and any facility in a source category designated by the Administrator of the EPA in a rulemaking as requiring a Title V permit. The rule also provides a means by which facilities can avoid the Title V or other requirements by limiting their potential to emit. A major facility is defined in Section 2-6-212 as one that has the potential to emit 100 tons per year of any regulation air pollutant as defined in Section 2-6-222, or that has the potential to emit 10 tons per year of a single

[4] This project does not qualify for the HRA Streamlining Policy because the new source is located in an overburdened community, is within 100 feet of the nearest receptor, and emits greater than 0.26 lbs/yr DPM.

hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants.
> The project's potential to emit criteria pollutants was calculated in accordance with District Policy and presented previously in Table 3; all emissions are below 100 tons per year per pollutant threshold for a major facility.

In addition, the potential to emit toxics was calculated in accordance with Regulation 2 Rule 5 and presented previously in Table 5; emissions are well below 10 tons per year single HAP threshold for a major facility.

The facility is not a Phase II Acid Rain Facility (Section 2-6-217) or a subject solid waste incinerator facility (Section 2-6-229), or a facility defined in a source category defined by EPA requiring a Title V permit. Therefore, Title V requirements, as implemented by Regulation 2, Rule 6 are not triggered.

Regulation 6 - Particulate Matter, Rule 1 - General Requirements

Ringelmann No. 1 Limitation (Section 6-1-301)

Except as provided in Sections 6-1-303, 6-1-304 and 6-1-306, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.
> Since the engine is expected to emit low amount of PM_{10}, it is expected to comply with *Regulation 6-1-301* pending a regular inspection.

Opacity Limitation (Section 6-1-302)

Except as provided in Sections 6-1-303, 6-1-304 and 6-1-306, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour an emission equal to or greater than 20% opacity as perceived by an opacity-sensing device, where such device is required by BAAQMD regulations.
> Since the engine is expected to emit low amounts of PM_{10}, it is expected to comply with *Regulation 6-1-302* pending a regular inspection.

Visible Particles (Section 6-1-305)

A person shall not emit particles which are large enough to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles.
> Since the engine is expected to emit low amounts of PM_{10}, it is not expected to produce visible emissions or fallout in violation of this regulation and will be assumed to comply with *Regulation 6-1-305* pending a regular inspection.

Particulate Weight Limitation (Section 6-1-310)

A person shall not emit from any source particulate matter in excess of 0.15 grains/dscf of exhaust gas volume.
> The PM emission rate for the proposed engine is 0.13 grams/bhp-hr, which results in an outlet grain loading of about 0.018 grains/dscf based on the engine sets' specifications (144 bhp, 740 acfm exhaust flow, & 1040° F emissions stack temperature). The PM emission

rates for the project are much less than the 0.15 grains/dscf limit and comply with *Regulation 6-1-310.1.* Note that the TSP concentration limits set forth in Regulation 6-1-301.2 do not apply because the PTE for PM per source is below the 1000 kg per year applicability threshold.

Regulation 9 – Inorganic Gaseous Pollutants, Rule 1 Sulfur Dioxide

The proposed engine is subject to the following sections of Regulation 9, Rule 1 and will comply with all sections by burning Ultra Low Sulfur Diesel with a sulfur content of 15 ppm, which results in less than 1 ppmv of SO_2 in the exhaust gas.

Limitations on Ground Level Concentrations (Section 9-1-301)

Sulfur Dioxide emissions shall not result in ground level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes or 0.05 ppm averaged over 24 hours.

General Emission Limitation (Section 9-1-302)

A gas stream containing Sulfur Dioxide shall not contain sulfur dioxide in excess of 300 ppm (dry).

Fuel Burning (Liquid and Solid Fuels) (Section 9-1-304)

The sulfur content of liquid fuel burned shall not exceed 0.5% by weight.

Regulation 9 – Inorganic Gaseous Pollutants, Rule 8 NO_x and CO from Stationary Internal Combustion Engines

Exemptions (Section 9-8-110)

Section 110.5 exempts emergency standby engines from the requirements of Sections 9-8-301 through 305, 501 and 503.

Emergency Standby Engines, Hours of Operation (Section 9-8-330)

The engine is subject to the requirements of *Regulation 9-8-330*, which limits reliability related operation of the engine to 50 hours per year.

> Permit Conditions for S-9 will include an operating limit that complies with this standard.

Monitoring and Records (Section 9-8-500)

The engine is subject to the reporting requirements of Sections 502 and 530.

> Permit Conditions for S-9 will include reporting requirements that meet this standard.

Regulation 10 – Standards of Performance for New Stationary Sources

New Source Performance Standards (NSPS)

40 Code of Federal Regulation Part 60, Subpart IIII

§60.4200(a)(1)(ii) specifies that this engine is subject to the requirements of this subpart.

§60.4205 specifies the emission standards that must be met by owners/operators of stationary CI ICE emergency engines. Per §60.4205(c), owners/operators of fire pump

engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in Table 4 to this subpart, for all pollutants.
> Compliance with the standards listed in Table 4 to Subpart IIII of 40 CFR Part 60 is summarized in the table below.

Table 6. Engine Emission Rates vs. Table 4 to Subpart IIII of Part 60 – Emission Standards for Stationary Fire Pump Engines

Pollutant	40 CFR 60, Subpart IIII Emission Standard (g/kW-hr)	S-9 Emission Rate (g/kW-hr)
NMHC + NO_X	4.0	3.7
CO	5.0	1.3
PM	0.30	0.17

The engine is exempt from the smoke emission standards of 40 CFR 1039.105 because the engine is constant-speed (exemption 1039.105(a)(2)).

§60.4206 requires that the owner/operator of a stationary CI ICE meet the applicable emission standards specified in §60.4205 over the entire life of the engine.

> The owner/operator is expected to comply with this requirement.

§60.4207 specifies fuel requirements that must be met for owners/operators of a stationary CI ICE engine subject to Subpart IIII. Effective October 1, 2010, engines with a displacement less than 30 L/cylinder that use diesel fuel must the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. 40 CFR 80.510(b) specifies standards of 15 ppm maximum sulfur content for nonroad diesel fuel and a cetane index of 40 or aromatic content of 35%.

> The owner/operator is expected to comply with this requirement because CARB allows only ultra-low sulfur diesel to be used for stationary engines in California.

§60.4209 specifies the monitoring requirements for owner/operators of stationary CI ICEs: emergency engines not meeting emission standards must be equipped with a non-resettable hour meter prior to startup, and DPFs (if equipped) must be installed with a backpressure monitor that notifies the owner/operator when high backpressure limit is approached. In addition, monitoring requirements of §60.4211 must be met (see next subsection, below).

> S-9 meets the standards applicable to emergency engines and will be equipped with a non-resettable hour meter prior to startup of the engine (even though it is not specifically required to do so per this section). An engine DPF will be equipped. Standard permit conditions will be imposed to ensure compliance with these requirements.

§60.4211 requires (a) owners/operators operate and maintain the engine and control device according to manufacturer's emission-related written instructions, change only those emission-related settings that are permitting by the manufacturer, and meet the requirements of 40 CFR 89, 94, and/or 1068 if applicable. In addition, §60.4211(c)

requires owner/operators of fire pump engines manufactured during or after the model year that applies to the fire pump engine power rating in Table 3 to this subpart that must comply with the emission standards specified in §60.4205(c) to comply by purchasing an engine certified to the emission standards in § 60.4204(b), or § 60.4205(b) or (c), as applicable, for the same model year and National Fire Protection Association (NFPA) nameplate engine power. Lastly, §60.4211(f) specifies emergency engine operation for non-emergency purposes are limited to 50 hours per year (up to 100 hours per year for certain situations) and emergency use is unlimited.

> The owner/operator is expected to comply with the compliance requirements outlined in §60.4211. The proposed engine is part of certified EPA Engine Family NJDXL04.5119. Due to the CARB ATCM limiting non-emergency use to number of hours necessary to comply with the testing requirements of the NFPA 25 - "Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.", the 100 hours per year provision does not apply.

§60.4214 specifies notification, reporting and recordkeeping requirements for owners/operators of CI ICEs.

> The proposed engine S-9 is not subject to initial notification requirements of §60.4214(b) because it is an emergency engine and meets the standards applicable to non-emergency engines in the applicable model year.

§60.4218 specifies the general provisions in 40 CFR 60.1 to 60.19 applicable.

> The owner/operator is expected to comply with these provisions.

Regulation 11 – National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP)

There are no subparts under 40 CFR Part 61 that apply to ICEs. Therefore, this regulation does not apply to the proposed source in this application.

40 CFR Part 63 Subpart ZZZZ establishes NESHAPs for Stationary Reciprocating Internal Combustion Engines (RICEs). Both area and major sources of RICEs are subject to Subpart ZZZZ. The facility constitutes an area source of HAPs because the potential to emit any single/combined HAP are below the 10/25 tons per year threshold for major sources. The proposed source S-9 is a new stationary RICE CI at an area source subject to (and compliant with) regulations under 40 CFR Part 60 Subpart IIII. Therefore, per 40 CFR 63.6590(c)(1), no further requirements apply for the proposed engine under Subpart ZZZZ.

Other Regulations

The BAAQMD is charged with enforcing the requirements of California's Air Toxic Control Measure for Stationary Compression Ignition Engines *Title 17, California Code of Regulations, Section 93115* for the purpose of reducing diesel particulate matter (PM) and criteria pollutant emissions from stationary diesel-fueled compression ignition (CI) engines.

Airborne Toxic Control Measure (ATCM) for Emergency Standby Diesel-Fueled CI Engines (>50 bhp)

Subsection 93115.6(a)(4) sets forth emission standards for new direct-drive emergency standby fire pump engines with maximum engine power greater than 50 HP.
> S-9 is subject to and meets the requirement of this section of the ATCM as shown in the table below:

Table 7. Engine Emission Rates vs. ATCM Emission Standards

Pollutant	ATCM Emission Standards (g/bhp-hr)	S-9 Emission Rate (g/bhp-hr)
PM	**0.22**	0.13
NMHC + NO_x	**3.0**	2.73
CO	**3.7**	1.0

Subsection 93115(a)(4)(A)(1)(b) requires that new stationary emergency standby diesel-fueled engines (>50 bhp) be certified to the emission standards as specified in *40 CFR §60.4202(d).*
> S-9 has been certified to meet EPA Tier 3 standards. S-9 meets 40 CFR Part 60 Subpart IIII. Therefore, the engine complies with this section of the ATCM.

Subsection 93115(a)(4)(A)(1)(c) limits the non-emergency operation to the number of hours necessary to comply with the testing requirements of NFPA 25 -"Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 2002 edition.
> Permit Conditions for S-9 will limit non-emergency operation to 34 hours/year/engine and as such, will comply with this section of the ATCM.

PUBLIC COMMENTS RECEIVED

Standard BAAQMD permitting procedures stipulate that all complete applications undergo a 10-Day Public Participation Period (PPP). During this time, members of the public may submit comments on application materials. During the 10-day PPP for this application, no comments were received on the application materials.

PERMIT CONDITIONS

S-9 will be subject to Permit Condition Number 22851.

Condition 22851:

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1.  Operating for reliability-related activities is limited
    to no more than 34 hours per year per engine which is
    the number of hours necessary to comply with the testing
    requirements of the National Fire Protection Association
    (NFPA) 25. This emergency fire pump is subject to the
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current National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems."

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations]

2. 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: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations,subsection (e)(2)(B)(3)]

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:"Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations,subsection(e)(4)(G)(1)]

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: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), (or, Regulation 2-6-501)]

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 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: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1)] or (e)(2)(B)(2)]

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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 for the equipment listed below. However, the proposed new source of TAC will be located within an Overburdened Community and requires an HRA, which triggers the public notification requirements of Regulation 2-1-412. After the comments are received from the public 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 and/or a Permit to Operate for the following equipment:

S-9 Emergency Standby Diesel Fire Pump Engine
Make: John Deere, Model: 4045 Series Power Tech E, Model Year: 2022, EPA Engine Family: NJDXL04.5119
144 bhp

By: Daniel Oliver Date: 02/02/2023
Daniel Oliver
Air Quality Engineer

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