San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING

April 5, 2022

Jose Soares
Jose Soares Dairy
PO Box 189
Delhi, CA 95315

**Re: Notice of Preliminary Decision - Authority to Construct**
**Facility Number: C-7180**
**Project Number: C-1212881**

Dear Mr. Soares:

Enclosed for your review and comment is the District's analysis of Jose Soares Dairy's application for an Authority to Construct for the installation of a 768 bhp Tier 2 certified diesel engine to provide emergency power in the event of an electrical outage, at 19155 Road 1, Chowchilla, CA.

The notice of preliminary decision for this project has been posted on the District's website (www.valleyair.org). After addressing all comments made during the 30-day public notice period, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Entor Pineda of Permit Services at (559) 230-5956.

Sincerely,

Brian Clements
Director of Permit Services

BC:EP

Enclosures

cc: Courtney Graham, CARB (w/ enclosure) via email

# San Joaquin Valley Air Pollution Control District
## Authority to Construct
## Application Review
Agricultural Diesel-Fired Emergency Standby IC Engine

| | | | |
|---|---|---|---|
| Facility Name: | Jose Soares Dairy | Date: | April 5, 2022 |
| Mailing Address: | PO Box 189<br>Delhi, CA 95315 | Engineer: | Entor Pineda |
| | | Lead Engineer: | Dustin Brown |
| Contact Person: | Jose Soares | | |
| Email: | jtsoaresdairy@aol.com | | |
| Telephone: | (209) 652-2990 | | |
| Application #: | C-7180-11-0 | | |
| Project #: | C-1212881 | | |
| Complete: | November 17, 2021 | | |

### I. Proposal

Jose Soares Dairy is proposing to install a 768 bhp (intermittent) diesel-fired emergency standby internal combustion (IC) engine powering an electrical generator.

### II. Applicable Rules

Rule 1070 Inspections (12/17/92)
Rule 2201 New and Modified Stationary Source Review Rule (8/15/19)
Rule 2410 Prevention of Significant Deterioration (6/16/11)
Rule 2520 Federally Mandated Operating Permits (8/15/19)
Rule 4001 New Source Performance Standards (4/14/99)
Rule 4002 National Emission Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101 Visible Emissions (2/17/05)
Rule 4102 Nuisance (12/17/92)
Rule 4201 Particulate Matter Concentration (12/17/92)
Rule 4701 Internal Combustion Engines - Phase 1 (8/21/03)
Rule 4702 Internal Combustion Engines (8/19/21)
Rule 4801 Sulfur Compounds (12/17/92)
CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice
Title 17 CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

## III. Project Location

The equipment will be located at 19155 Road 1 in Chowchilla, CA.

The District has verified that the equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

## IV. Process Description

The emergency standby engine powers an electrical generator which will be used for the growing of crops and/or animals. Other than emergency standby operation, the engine may be operated up to 100 hours per year for maintenance and testing purposes.

## V. Equipment Listing

**C-7180-11-0:** 768 BHP (INTERMITTENT) VOLVO MODEL TAD1642GE TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

## VI. Emission Control Technology Evaluation

The applicant has proposed to install a Tier 2 certified diesel-fired IC engine that is fired on very low-sulfur diesel fuel.

The proposed engine(s) meet the latest Tier Certification requirements; therefore, the engine(s) meets the latest ARB/EPA emissions standards for diesel particulate matter, hydrocarbons, nitrogen oxides, and carbon monoxide (see Appendix C for a copy of the emissions data sheet and/or the ARB/EPA executive order).

The use of very low-sulfur diesel fuel (0.0015% by weight sulfur maximum) reduces $SO_X$ emissions by over 99% from standard diesel fuel.

## VII. General Calculations

### A. Assumptions

| | |
|---|---|
| Emergency operating schedule: | 24 hours/day |
| Non-emergency operating schedule: | 100 hours/year |
| Density of diesel fuel: | 7.1 lb/gal |
| EPA F-factor (adjusted to 60 °F): | 9,051 dscf/MMBtu |
| Fuel heating value: | 137,000 Btu/gal |
| BHP to Btu/hr conversion: | 2,542.5 Btu/bhp-hr |
| Thermal efficiency of engine: | commonly ≈ 35% |
| $PM_{10}$ fraction of diesel exhaust: | 0.96 (CARB, 1988) |

Conversion factor: 1.34 bhp/kw

## B. Emission Factors

| Emission Factors | | | |
|---|---|---|---|
| **Pollutant** | **Emission Factor (g/bhp-hr)** | **Emission Factor (g/kw-hr)** | **Source** |
| $NO_X$ | 3.87 | 5.19 | Engine Manufacturer |
| $SO_X$ | 0.0051 | 0.0068 | Mass Balance Equation Below |
| $PM_{10}$ | 0.08 | 0.112 | Engine Manufacturer |
| CO | 0.51 | 0.69 | Engine Manufacturer |
| VOC | 0.12 | 0.16 | Engine Manufacturer |

$$\frac{0.000015\,lb-S}{lb-fuel}\times\frac{7.1\,lb-fuel}{gallon}\times\frac{2\,lb-SO_2}{1\,lb-S}\times\frac{1\,gal}{137{,}000\,Btu}\times\frac{1\,bhp\,input}{0.35\,bhp\,out}\times\frac{2{,}542.5\,Btu}{bhp-hr}\times\frac{453.6\,g}{lb}=\quad 0.0051\quad\frac{g-SO_x}{bhp-hr}$$

## C. Calculations

### 1. Pre-Project Potential to Emit (PE1)

Since this is a new emissions unit, PE1 = 0.

### 2. Post-Project Potential to Emit (PE2)

The daily and annual PE2 are calculated as follows:

Daily PE2 (lb-pollutant/day) = EF (g-pollutant/bhp-hr) x rating (bhp) x operation (hr/day) / 453.6 g/lb

Annual PE2 (lb-pollutant/yr) = EF (g-pollutant/bhp-hr) x rating (bhp) x operation (hr/yr) / 453.6 g/lb

| Post Project Emissions (PE2) | | | | | | |
|---|---|---|---|---|---|---|
| **Pollutant** | **Emissions Factor (g/bhp-hr)** | **Rating (bhp)** | **Daily Hours of Operation (hrs/day)** | **Annual Hours of Operation (hrs/year)** | **Daily PE2 (lb/day)** | **Annual PE2 (lb/yr)** |
| $NO_x$ | 3.87 | 768 | 24 | 100 | **157.3** | **655** |
| $SO_x$ | 0.0051 | 768 | 24 | 100 | **0.2** | **1** |
| $PM_{10}$ | 0.08 | 768 | 24 | 100 | **3.3** | **14** |
| CO | 0.51 | 768 | 24 | 100 | **20.7** | **86** |
| VOC | 0.12 | 768 | 24 | 100 | **4.9** | **20** |

### 3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

SSPE1 is summarized in the following table.

| SSPE1[1] (lb/year) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Permit unit** | **$NO_X$** | **$SO_X$** | **$PM_{10}$** | **CO** | **VOC** | **$NH_3$** | **$H_2S$** |
| C-7180-6-0 | 0 | 0 | 0 | 0 | 1,152 | 394 | 0 |
| C-7180-7-0 | 0 | 0 | 17,931 | 0 | 42,089 | 83,831 | 0 |
| C-7180-8-1 | 0 | 0 | 0 | 0 | 6,480 | 19,427 | 471 |
| C-7180-9-0 | 0 | 0 | 0 | 0 | 2,101 | 11,250 | 0 |
| C-7180-10-0 | 0 | 0 | 0 | 0 | 58,171 | 0 | 0 |
| **SSPE1** | **0** | **0** | **17,931** | **0** | **109,993** | **114,902** | **471** |

### 4. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the Post-Project Stationary Source Potential to Emit (SSPE2) is the PE from all units with valid ATCs or PTOs, except for emissions units proposed to be shut down as part of the Stationary Project, at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

For this project the change in emissions for the facility is due to the installation of the new emergency standby IC engine. Thus:

| SSPE2 (lb/year) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Permit unit** | **$NO_X$** | **$SO_X$** | **$PM_{10}$** | **CO** | **VOC** | **$NH_3$** | **$H_2S$** |
| C-7180-6-0 | 0 | 0 | 0 | 0 | 1,152 | 394 | 0 |
| C-7180-7-0 | 0 | 0 | 17,931 | 0 | 42,089 | 83,831 | 0 |
| C-7180-8-1 | 0 | 0 | 0 | 0 | 6,480 | 19,427 | 471 |
| C-7180-9-0 | 0 | 0 | 0 | 0 | 2,101 | 11,250 | 0 |
| C-7180-10-0 | 0 | 0 | 0 | 0 | 58,171 | 0 | 0 |
| C-7180-11-0 | 655 | 1 | 14 | 86 | 20 | 0 | 0 |
| **SSPE2** | **655** | **1** | **17,945** | **86** | **110,013** | **114,902** | **471** |

[1] SSPE1 values acquired from Project # C-1203235

## 5. Major Source Determination

**Rule 2201 Major Source Determination:**

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

Since agricultural operations do not fall under any of the specific source categories specified in 40 CFR 51.165, fugitive emissions are not counted when determining if an agricultural operation is a major source.

Since emissions at this facility are not actually collected, a determination of whether emissions could be reasonably collected must be made by the permitting authority. The California Air Pollution Control Association (CAPCOA) prepared guidance in 2005 for estimating potential to emit of Volatile Organic Compounds from dairy farms. The guidance states that *"VOC emissions from the milking centers, cow housing areas, corrals, common manure storage areas, and land application of manure are not physically contained and could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening. No collection technologies currently exist for VOC emissions from these emissions units. Therefore, the VOC emissions from these sources are considered fugitive."* The guidance also concludes that, because VOC collection technologies do exist for liquid waste systems at dairies, *"… the VOC emissions from waste lagoons and storage ponds are considered non-fugitive."* The District has researched this issue and concurs with the CAPCOA assessment, as discussed in more detail below.

Cow Housing:

Although there are smaller dairy farms that have partially enclosed freestall barns, these barns are not fully enclosed and none of the barns have been found to vent the exhaust through a collection device. The airflow requirements through dairy barns are extremely high, primarily for herd health purposes. The airflow requirements will be even higher in the San Joaquin valley, where temperatures reach in excess of 110 degrees in the hot summer. Collection and control of the exhaust including the large amounts of airflow have not yet been achieved by any facility. Due to this difficultly, the District cannot reasonably demonstrate that emissions can pass through a stack, chimney, vent, or other functionally equivalent opening.

It must also be noted that EPA has determined that emissions from open-air cattle feedlots are fugitive in nature.[2] In the District's judgment, this determination for emissions from open feedlots necessitates a similar determination for the open-sided freestalls (usually with open access to corrals or pens and free movement of cattle in and out of the covered area) typical of the San Joaquin Valley since the typical open freestall barn in the San Joaquin Valley bears a far greater resemblance to an extensive shade structure located in a large open lot than an actual enclosed building. Therefore, emissions from open freestall barns are most appropriately treated as fugitive.

Manure Storage Areas:

Many dairies have been found to cover dry manure piles. Covering dry manure piles is also a mitigation measure included in District Rule 4570. However, the District was not able to find any facility, which currently captures the emissions from the storage or handling of manure piles. Although some of these piles are covered, the emissions cannot reasonably be captured. Therefore, the District cannot reasonably demonstrate that these emissions can pass through a stack, chimney, vent, or other functionally equivalent opening. In addition, emissions from manure piles have been shown to be insignificant in recent studies.

Land Application:

Emissions generated from the application of manure on land cannot reasonably be captured due to the extremely large areas, in some cases thousands of acres, of cropland at dairies. Therefore, the District cannot reasonably demonstrate that these emissions can pass through a stack, chimney, vent, or other functionally equivalent opening.

Feed Handling and Storage:

The majority of dairies store the silage piles underneath a tarp or in an Ag-bag. The entire pile is covered except for the face of the pile. The face of the pile is kept open due to the continual need to extract the silage for feed purposes. The silage pile is disturbed 2-3 times per day. Because of the ongoing disturbance to these piles, it makes it extremely difficult to design a system to capture the emissions from these piles. In fact, as far as the District is aware, no system has been designed to successfully extract the gases from the face of the pile to capture them, and, as important, no study has assessed the potential impacts on silage quality of a continuous air flow across the silage pile, as would be required by such a collection system. Therefore, the District cannot demonstrate that these emissions

[2] Letter from William Wehrum, EPA Acting Administrator, to Terry Stokes, CEO – National Cattlemen's Beef Association (November 2, 2006)
(http://www.epa.gov/Region7/programs/artd/air/nsr/nsrmemos/cowdust.pdf)

can be reasonably expected to pass through a stack, chimney, vent, or other functionally equivalent opening.

As discussed above, the VOC emissions from the cow housing, manure storage areas, land application of manure and feed handling and storage are considered fugitive. The District has determined that control technology to capture emissions from lagoons (biogas collection systems, for instance) is in use; therefore, these emissions can be reasonably collected and are not fugitive. Therefore, only emissions from the non-fugitive sources will be used to determine if this facility is a major source.

SSPE calculations excluding fugitive emissions have been acquired from project C-1203235 and are summarized in the following table:

| Non-Fugitive SSPE1 (lb/year) | | | | | |
|---|---|---|---|---|---|
| | **$NO_X$** | **$SO_X$** | **$PM_{10}$** | **CO** | **VOC** |
| C-7180-8 – Lagoon only | 0 | 0 | 0 | 0 | 3,101 |
| Non-Fugitive SSPE1 | 0 | 0 | 0 | 0 | 3,101 |

This project results in an increase in emissions, therefore non-fugitive SSPE2 is summarized below:

| Non-Fugitive SSPE2 (lb/year) | | | | | |
|---|---|---|---|---|---|
| | **$NO_X$** | **$SO_X$** | **$PM_{10}$** | **CO** | **VOC** |
| C-7180-8 – Lagoon only | 0 | 0 | 0 | 0 | 3,101 |
| C-7180-11-0 | 655 | 1 | 14 | 86 | 20 |
| Non-Fugitive SSPE2 | 655 | 1 | 14 | 86 | 3,121 |

The major source determination is summarized in the table below:

| Rule 2201 Major Source Determination (lb/year) | | | | | | |
|---|---|---|---|---|---|---|
| | **$NO_X$** | **$SO_X$** | **$PM_{10}$** | **$PM_{2.5}$** | **CO** | **VOC** |
| SSPE1 | 0 | 0 | 0 | 0 | 0 | 3,101 |
| SSPE2 | 655 | 1 | 14 | 14 | 86 | 3,121 |
| Major Source Threshold | 20,000 | 140,000 | 140,000 | 140,000 | 200,000 | 20,000 |
| Major Source? | No | No | No | No | No | No |

As seen in the table above, the facility is not an existing Major Source and is not becoming a Major Source as a result of this project.

**Rule 2410 Major Source Determination:**

The facility is not an existing major source for PSD for at least one pollutant. Therefore the facility is not an existing major source for PSD.

### 6. Baseline Emissions (BE)

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

Since this is a new emissions unit, BE = PE1 = 0 for all criteria pollutants.

### 7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."

Since this facility is not a major source for any of the pollutants addressed in this project, this project does not constitute an SB 288 major modification.

### 8. Federal Major Modification / New Major Source

**Federal Major Modification**

District Rule 2201 states that a Federal Major Modification is the same as a “Major Modification” as defined in 40 CFR 51.165 and part D of Title I of the CAA.

As defined in 40 CFR 51.165, Section (a)(1)(v) and part D of Title I of the CAA, a Federal Major Modification is any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act. The significant net emission increase threshold for each criteria pollutant is included in Rule 2201.

Since this facility is not a Major Source for any pollutants, this project does not constitute a Federal Major Modification and no further discussion is required.

**New Major Source**

As demonstrated above, this facility is not becoming a Major Source as a result of this project, therefore, this facility is not a New Major Source pursuant to 40 CFR 51.165 a(1)(iv)(A)(3).

**9. Rule 2410 - Prevention of Significant Deterioration (PSD) Applicability Determination**

The project potential to emit, by itself, will not exceed any PSD major source thresholds. Therefore Rule 2410 is not applicable and no further discussion is required.

**10. Quarterly Net Emissions Change (QNEC)**

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix E.

## VIII. Compliance

### Rule 1070 Inspections

This rule applies to any source operation, which emits or may emit air contaminants.

This rule allows the District to perform inspections for the purpose of obtaining information necessary to determine whether air pollution sources are in compliance with applicable rules and regulations. The rule also allows the District to require record keeping, to make inspections and to conduct tests of air pollution sources. Therefore, the following conditions will be listed on each ATC to ensure compliance:

- {3215} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit. [District Rule 1070]

- {3216} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit. [District Rule 1070]

## Rule 2201 New and Modified Stationary Source Review Rule

### A. Best Available Control Technology (BACT)

#### 1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB288 Major Modification or a Federal Major Modification, as defined by the rule.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

As discussed in Section I, the facility is proposing to install a new emergency standby IC engine. Additionally, as determined in Sections VII.C.7 and VII.C.8, this project does not result in an SB288 Major Modification or a Federal Major Modification, respectively. Therefore, BACT can only be triggered if the daily emissions exceed 2.0 lb/day for any pollutant.

The daily emissions from the new engine are compared to the BACT threshold levels in the following table:

| New Emissions Unit BACT Applicability | | | | |
|---|---|---|---|---|
| **Pollutant** | **Daily Emissions for the new unit (lb/day)** | **BACT Threshold (lb/day)** | **SSPE2 (lb/yr)** | **BACT Triggered?** |
| $NO_X$ | 157.3 | > 2.0 | n/a | Yes |
| $SO_X$ | 0.2 | > 2.0 | n/a | No |
| $PM_{10}$ | 3.3 | > 2.0 | n/a | Yes |
| CO | 20.7 | > 2.0 and SSPE2 ≥ 200,000 lb/yr | 86 | No |
| VOC | 4.9 | > 2.0 | n/a | Yes |

As shown above, BACT will be triggered for $NO_X$, $PM_{10}$, and VOC emissions from the engine for this project.

### 2. BACT Guideline

BACT Guideline 3.1.1, which appears in Appendix B of this report, covers diesel-fired emergency IC engines.

### 3. Top Down BACT Analysis

Per District Policy APR 1305, Section IX, "A top down BACT analysis shall be performed as a part of the Application Review for each application subject to the BACT requirements pursuant to the District's NSR Rule for source categories or classes covered in the BACT Clearinghouse, relevant information under each of the following steps may be simply cited from the Clearinghouse without further analysis."

Pursuant to the attached top down BACT Analysis, which appears in Appendix B of this report, BACT is satisfied with:

$NO_X$: Latest Available Tier Certification level for applicable horsepower
VOC: Latest Available Tier Certification level for applicable horsepower
$PM_{10}$: 0.15 g/bhp-hr

The facility has proposed to install a 768 bhp Tier 2 certified IC engine (with a $PM_{10}$ emissions rate of 0.08 g/bhp-hr). Therefore, BACT is satisfied for $NO_x$, VOC, and $PM_{10}$.

## B. Offsets

Pursuant to Section 4.6.2 of this rule, offsets are not required for emergency IC engines. The engine in this project is an emergency IC engine; therefore, this exemption is applicable to this project.

However, even when there is an applicable exemption, the SSPE2 values are compared to the offset threshold to determine if offsets are triggered. In its PAS database, the District keeps track of facilities where offsets are triggered but an exemption applies. The SSPE2 values are compared to the offset trigger thresholds in the following table:

| **Offset Determination (lb/year)** | | | | | |
|---|---|---|---|---|---|
| | **NOx** | **SOx** | **$PM_{10}$** | **CO** | **VOC** |
| SSPE2 | 655 | 1 | 17,945 | 86 | 110,013 |
| Offset Thresholds | 20,000 | 54,750 | 29,200 | 200,000 | 20,000 |
| Offsets Triggered? | No | No | No | No | Yes |

### 2. Quantity of Offsets Required

As shown in the table above, offsets are triggered for VOC emissions since the VOC SSPE2 exceeds the offset trigger threshold; however, as previously discussed, the offset exemption from Section 4.6.2 of District Rule 2201 is applicable to this project; therefore, offset calculations are not necessary and offsets are not required.

## C. Public Notification

### 1. Applicability

Public noticing is required for:

a. New Major Sources, SB288 Major Modifications, and Federal Major Modifications

As shown in Sections VII.C.5, VII.C.7, and VII.C.8, this facility is not a new Major Source, not an SB 288 Major Modification, and not a Federal Major Modification, respectively.

b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant

As calculated in Section VII.C.2, daily emissions for $NO_X$ are greater than 100 lb/day.

c. Any project which results in the offset thresholds being surpassed

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

| Offset Thresholds | | | | |
|---|---|---|---|---|
| **Pollutant** | **SSPE1 (lb/year)** | **SSPE2 (lb/year)** | **Offset Threshold** | **Public Notice Required?** |
| $NO_X$ | 0 | 655 | 20,000 lb/year | No |
| $SO_X$ | 0 | 1 | 54,750 lb/year | No |
| $PM_{10}$ | 17,931 | 17,945 | 29,200 lb/year | No |
| CO | 0 | 86 | 200,000 lb/year | No |
| VOC | 109,993 | 110,013 | 20,000 lb/year | No |

As detailed above, the threshold for VOC was already previously surpassed therefore no public notice is required. Additionally, there were no other thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

d. Any project with a Stationary Source Project Increase in Permitted Emissions (SSIPE) greater than 20,000 lb/year for any pollutant.

For this project, the proposed engine is the only emissions unit that will generate an increase in Potential to Emit. Since the proposed engine emissions are well below 20,000 lb/year for all pollutants (See Section VII.C.2), the SSIPE for this project will be below the public notice threshold.

e. Title V Significant Modification

Since this facility does not have a Title V operating, this change is not a Title V significant Modification, and therefore public noticing is not required.

**2. Public Notice Action**

As demonstrated above, this project will require public noticing. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be electronically published on the District's website prior to the issuance of the ATC for this equipment.

## D. Daily Emissions Limits

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- {4771} Emissions from this IC engine shall not exceed any of the following limits: 3.87 g-NOx/bhp-hr, 0.51 g-CO/bhp-hr, or 0.12 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

- {4772} Emissions from this IC engine shall not exceed 0.08 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

- {4258} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, and 17 CCR 93115]

## E. Compliance Assurance

### 1. Source Testing

Pursuant to District Policy APR 1705, source testing is not required for emergency standby IC engines to demonstrate compliance with Rule 2201.

### 2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

### 3. Recordkeeping

Recordkeeping requirements, in accordance with District Rule 4702, will be discussed in Section VIII, *District Rule 4702*, of this evaluation.

### 4. Reporting

No reporting is required to ensure compliance with Rule 2201.

## F. Ambient Air Quality Analysis (AAQA)

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to Appendix D of this document for the AAQA summary sheet.

The proposed location is in an attainment area for $NO_X$, CO, and $SO_X$. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for $NO_X$, CO, or $SO_X$.

The proposed location is in a non-attainment area for the state's $PM_{10}$ as well as federal and state $PM_{2.5}$ thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for $PM_{10}$ and $PM_{2.5}$.

## Rule 2410 Prevention of Significant Deterioration

This project does not result in a new PSD major source or PSD major modification. No further discussion is required.

## Rule 2520 Federally Mandated Operating Permits

Since this facility's potential to emit does not exceed any major source thresholds of Rule 2201, this facility is not a Major Source, and Rule 2520 does not apply.

## Rule 4001 New Source Performance Standards (NSPS)

### 40 CFR 60 Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The District has not been delegated the authority to implement Subpart IIII requirements for non-Major Sources; therefore, no requirements shall be included on the permit.

## Rule 4002 National Emission Standards for Hazardous Air Pollutants

### 40 CFR 63 Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Emissions (RICE)

The District has not been delegated the authority to implement NESHAP regulations for Area Source requirements for non-Major Sources; therefore, no requirements shall be included on the permit.

## Rule 4101 Visible Emissions

Rule 4101 states that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. Therefore, the following condition will be listed on the ATC to ensure compliance:

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

## Rule 4102 Nuisance

Rule 4102 states that no air contaminant shall be released into the atmosphere which causes a public nuisance. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, the following condition will be listed on the ATC to ensure compliance:

- {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

**California Health & Safety Code 41700 (Health Risk Assessment)**

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

An HRA is not required for a project with a total facility prioritization score of less than or equal to one. According to the Technical Services Memo for this project (Appendix D), the total facility prioritization score including this project was less than or equal to one. Therefore, no further analysis is required to determine the impact from this project and compliance with the District's Risk Management Policy is expected.

| RMR Summary | | | |
|---|---|---|---|
| **Categories** | **Emergency IC Engine (Unit 11-0)** | **Project Totals** | **Facility Totals** |
| **Prioritization Score** | **3.56E-01** | 3.56E-01 | >1 |
| **Acute Hazard Index** | N/A* | N/A* | 0.55 |
| **Chronic Hazard Index** | 0.00 | 0.00 | 0.00 |
| **Maximum Individual Cancer Risk** | 8.35E-08 | 8.35E-08 | 7.68E-07 |
| **T-BACT Required?** | No | | |
| **Special Permit Conditions?** | Yes | | |

*Acute Hazard Index was not calculated for Unit 11 since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for this type of unit.

**Discussion of T-BACT**

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 20 in a million). As outlined by the Technical Services Memo in Appendix D of this report, the emissions increases for this project were determined to be less than significant.

The following conditions will be listed on the ATC as a mechanism to ensure compliance with the RMR:

- {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

- {4772} Emissions from this IC engine shall not exceed 0.08 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

- {4775} This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 100 hours per calendar year. [District Rules 2201, 4102 and 4702]

**Rule 4201 Particulate Matter Concentration**

Rule 4201 limits particulate matter emissions from any single source operation to 0.1 g/dscf, which, as calculated below, is equivalent to a $PM_{10}$ emission factor of 0.4 g-$PM_{10}$/bhp-hr.

$$0.1 \quad \frac{grain-PM}{dscf} \times \frac{g}{15.43 grain} \times \frac{1\,Btu_{in}}{0.35\,Btu_{out}} \times \frac{9{,}051 dscf}{10^6\,Btu} \times \frac{2{,}542.5\,Btu}{1 bhp-hr} \times \frac{0.96 g-PM_{10}}{1 g-PM} = 0.4\,\frac{g-PM_{10}}{bhp-hr}$$

The new engine has a $PM_{10}$ emission factor less than 0.4 g/bhp-hr. Therefore, compliance is expected and the following condition will be listed on the ATC:

- {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

**Rule 4701 Internal Combustion Engines - Phase 1**

The purpose of this rule is to limit the emissions of nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion engines. Except as provided in Section 4.0, the provisions of this rule apply to any internal combustion engine, rated greater than 50 bhp, that requires a PTO.

Section 4.1 of the rule specifically exempts IC engines in agricultural operations used for the growing of crops or raising of fowl or animals. Since the engine(s) are used for the growing of crops or raising of fowl or animals, they are exempt from the requirements of this rule. Therefore, the following condition will be listed on the ATC(s) to ensure compliance.

- {4002} This IC engine shall only be used for the growing and harvesting of crops or the raising of fowl or animals for the primary purpose of making a profit, providing

a livelihood, or conducting agricultural research or instruction by an educational institution. [District Rule 4701 and 4702, and 17 CCR 93115]

**Rule 4702 Internal Combustion Engines**

Emergency standby engines are subject to District Rule 4702 requirements. Emergency standby engines are defined in Section 3.0 of District Rule 4702 as follows:

> *3.15 Emergency Standby Engine: an internal combustion engine which operates as a temporary replacement for primary mechanical or electrical power during an unscheduled outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the operator. An engine shall be considered to be an emergency standby engine if it is used only for the following purposes: (1) periodic maintenance, periodic readiness testing, or readiness testing during and after repair work; (2) unscheduled outages, or to supply power while maintenance is performed or repairs are made to the primary power supply; and (3) if it is limited to operate 100 hours or less per calendar year for non-emergency purposes. An engine shall not be considered to be an emergency standby engine if it is used: (1) to reduce the demand for electrical power when normal electrical power line service has not failed, or (2) to produce power for the utility electrical distribution system, or (3) in conjunction with a voluntary utility demand reduction program or interruptible power contract.*

Emergency standby engines cannot be used to reduce the demand for electrical power when normal electrical power line service has not failed, or to produce power for the electrical distribution system, or in conjunction with a voluntary utility demand reduction program or interruptible power contract. The following conditions will be included on the permit:

- {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702 and 17 CCR 93115]

- {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702 and 17 CCR 93115]

Operation of emergency standby engines are limited to 100 hours or less per calendar year for non-emergency purposes. The Air Toxic Control Measure for Stationary Compression Ignition Engines (Stationary ATCM) limits this engine's maintenance and testing to 100 hours/year; therefore, compliance is expected. The following conditions will be included on the permit:

- {4775} This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 100 hours per calendar year. [District Rules 2201, 4102 and 4702]

The following exemption in Section 4.2 of District Rule 4702 applies to emergency standby engines:

> *4.2 Except for the requirements of Section 5.10 and Section 6.2.3, the requirements of this rule shall not apply to:*
> *4.2.1 An emergency standby engine as defined in Section 3.0 of this rule, and provided that it is operated with a nonresettable elapsed operating time meter. In lieu of a nonresettable time meter, the owner of an emergency engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.*

Pursuant to the exemption in Section 4.2, the following requirements of Section 5.10 are applicable to emergency standby engines

Section 5.10 requires the owner to:

> *5.10.2 Properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier.*
>
> *5.10.3 Monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.*
>
> *5.10.4 Install and operate a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and is allowed by Permit-to-Operate or Permit-Exempt Equipment Registration condition. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.*

Properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier. The following condition will be included on the permit:

- {4261} This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]

Monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier. The following condition will be included on the permit:

- {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]

Install and operate a nonresettable elapsed time meter. In lieu of installing a nonresettable elapsed time meter, the operator may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and EPA and is allowed by Permit-to-Operate condition. The operator shall properly maintain and operate the nonresettable elapsed time meter or alternative device in accordance with the manufacturer's instructions. The following condition will be included on the permit:

- {4749} This engine shall be equipped with a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District determines that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. [District Rule 4702 and 17 CCR 93115]

The exemption in Rule 4702 Section 4.2 for emergency standby engines requires the engines to comply with Section 6.2.3, shown below.

> *6.2.3 An owner claiming an exemption under Section 4.2 or Section 4.3 shall maintain annual operating records. This information shall be retained for at least five years, shall be readily available, and provided to the APCO upon request. The records shall include, but are not limited to, the following:*
>
> > *6.2.3.1 Total hours of operation,*
> > *6.2.3.2 The type of fuel used,*
> > *6.2.3.3 The purpose for operating the engine,*
> > *6.2.3.4 For emergency standby engines, all hours of non-emergency and emergency operation shall be reported, and*
> > *6.2.3.5 Other support documentation necessary to demonstrate claim to the exemption.*

Records of the total hours of operation, type of fuel used, purpose for operating the engine, all hours of non-emergency and emergency operation, and other support documentation must be maintained. All records shall be retained for a period of at least

five years, shall be readily available, and be made available to the APCO upon request. The following conditions will be included on the permit:

- {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]

- {4263} The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]

- {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

**Rule 4801 Sulfur Compounds**

Rule 4801 requires that sulfur compound emissions (as $SO_2$) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

Volume $SO_2$ = (n x R x T) ÷ P
n = moles $SO_2$
T (standard temperature) = 60 °F or 520 °R
R (universal gas constant) = $\frac{10.73\,\text{psi}\cdot\text{ft}^3}{\text{lb}\cdot\text{mol}\cdot{}^\circ\text{R}}$

$$\frac{0.000015\,lb-S}{lb-fuel}\times\frac{7.1\,\text{lb}}{\text{gal}}\times\frac{64\,\text{lb}-SO_2}{32\,\text{lb}-S}\times\frac{1\,\text{MMBtu}}{9{,}051\,\text{scf}}\times\frac{1\,\text{gal}}{0.137\,\text{MMBtu}}\times\frac{\text{lb}-\text{mol}}{64\,\text{lb}-SO_2}\times\frac{10.73\,\text{psi}-\text{ft}^3}{\text{lb}-\text{mol}-{}^\circ\text{R}}\times\frac{520{}^\circ\text{R}}{14.7\,\text{psi}}\times 1{,}000{,}000 = \quad 1.0\ \text{ppmv}$$

Since 1.0 ppmv is ≤ 2,000 ppmv, this engine is expected to comply with Rule 4801. Therefore, the following condition will be listed on the ATC to ensure compliance:

- {4258} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, and 17 CCR 93115]

**California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this engine is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

**Title 17 California Code of Regulations (CCR), Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines**

The following requirements apply to new engines (those installed after 1/1/05):

| Title 17 CCR Section 93115 Requirements for New Emergency IC Engines Powering Electrical Generators | Proposed Method of Compliance with Title 17 CCR Section 93115 Requirements |
|---|---|
| Pursuant to Section 93115.3(b), the requirements specified in Sections 93115.6, 93115.7, and 93115.10(a) do not apply to new or in-use stationary diesel-fueled CI engines used in agricultural operations. | The following condition will be included on the permit:<br>• {4002} This IC engine shall only be used for the growing and harvesting of crops or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. [District Rules 4701 and 4702, and 17 CCR 93115] |
| Emergency engine(s) must be fired on CARB diesel fuel, or an approved alternative diesel fuel. | The applicant has proposed the use of CARB certified diesel fuel. The proposed permit condition, requiring the use of CARB certified diesel fuel, is included on the permit.<br>• {4258} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, and 17 CCR 93115] |
| The engine(s) must meet Table 6 of the ATCM, which requires the Off-road engine certification standard for the specific power rating of the proposed engine on the date of acquisition (purchase date) or permit application submittal to the District, whichever is earliest. | For emergency engines, the Off-road engine certification standards are identified in Table 1 of the ATCM[3]. The applicant has proposed the use of an emergency engine that meets the Table 1 emission standards (Off-road engine certification standards) for the applicable horsepower range). |

[3] Although Section 93115.8 of the ATCM states that new IC engines used in agricultural operations must meet the emissions limits in Table 6, the ATCM Staff Report clarifies that all new emergency standby IC engines must meet the emissions limits specified in Table 1 of the ATCM. This eliminates the requirement that new agricultural emergency standby IC engines would otherwise have to meet the after-treatment based Tier 4 standards specified in Table 6.

| | |
|---|---|
| A non-resettable hour meter with a minimum display capability of 9,999 hours shall be installed upon engine installation, or by no later than January 1, 2005, on all engines subject to all or part of the requirements of sections 93115.6, 93115.7, or 93115.8(a) unless the District determines on a case-by-case basis that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. | The following condition will be included on the permit:<br><br>• {4749} This engine shall be equipped with a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District determines that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. [District Rule 4702 and 17 CCR 93115] |
| An owner or operator shall maintain monthly records of the following: emergency use hours of operation; maintenance and testing hours of operation; hours of operation for emission testing; initial start-up testing hours; hours of operation for all other uses; and the type of fuel used. All records shall be retained for a minimum of 36 months. | The following conditions will be included on the permit:<br><br>• {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]<br><br>• {4263} The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]<br><br>• {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115] |

**California Environmental Quality Act (CEQA)**

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The District performed an Engineering Evaluation (this document) for the proposed project and determined that the project qualifies for ministerial approval under the District's Guideline for Expedited Application Review (GEAR). Section 21080 of the Public Resources Code exempts from the application of CEQA those projects over which a public agency exercises only ministerial approval. Therefore, the District finds that this project is exempt from the provisions of CEQA.

To ensure that issuance of this permit does not conflict with any conditions imposed by any local agency permit process, the following permit condition will be listed on the ATC(s):

- {3658} This permit does not authorize the violation of any conditions established for this facility in the Conditional Use Permit (CUP), Special Use Permit (SUP), Site Approval, Site Plan Review (SPR), or other approval documents issued by a local, state, or federal agency. [Public Resources Code 21000-21177: California Environmental Quality Act].

## IX. Recommendation

Pending a successful NSR Public Noticing period, issue Authority to Construct C-7180-11-0 subject to the permit conditions on the attached draft Authority to Construct in Appendix A.

## X. Billing Information

| Billing Schedule | | | |
|---|---|---|---|
| **Permit Number** | **Fee Schedule** | **Fee Description** | **Fee Amount** |
| C-7180-11-0 | 3020-10-D | 768 bhp IC engine | $577 |

## Appendixes

A. Draft ATC
B. BACT Guideline and BACT Analysis
C. Emissions Data Sheet
D. RMR and AAQA
E. QNEC Calculations

# Appendix A
# Draft ATC

San Joaquin Valley
Air Pollution Control District

# AUTHORITY TO CONSTRUCT



**PERMIT NO:** C-7180-11-0 **ISSUANCE DATE:** DRAFT

**LEGAL OWNER OR OPERATOR:** JOSE SOARES DAIRY
**MAILING ADDRESS:** 12852 ROAD 9
MADERA, CA 93637

**LOCATION:** 19155 ROAD 1
CHOWCHILLA, CA

**EQUIPMENT DESCRIPTION:**
768 BHP (INTERMITTENT) VOLVO MODEL TAD1642GE TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

## CONDITIONS

1. {3215} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit. [District Rule 1070]
2. {3216} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit. [District Rule 1070]
3. {3658} This permit does not authorize the violation of any conditions established for this facility in the Conditional Use Permit (CUP), Special Use Permit (SUP), Site Approval, Site Plan Review (SPR), or other approval documents issued by a local, state, or federal agency. [Public Resources Code 21000-21177: California Environmental Quality Act]
4. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
5. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
6. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

CONDITIONS CONTINUE ON NEXT PAGE

**YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO



Brian Clements, Director of Permit Services



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7. {4002} This IC engine shall only be used for the growing and harvesting of crops or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. [District Rules 4701 and 4702, and 17 CCR 93115]

8. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

9. {4749} This engine shall be equipped with a non-resettable hour meter with a minimum display capability of 9,999 hours, unless the District determines that a non-resettable hour meter with a different minimum display capability is appropriate in consideration of the historical use of the engine and the owner or operator's compliance history. [District Rule 4702 and 17 CCR 93115]

10. {4258} Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight is to be used. [District Rules 2201 and 4801, and 17 CCR 93115]

11. Emissions from this IC engine shall not exceed any of the following limits: 3.87 g-NOx/bhp-hr, 0.51 g-CO/bhp-hr, or 0.12 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]

12. Emissions from this IC engine shall not exceed 0.08 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93115]

13. {4261} This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]

14. {3478} During periods of operation for maintenance, testing, and required regulatory purposes, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]

15. {3807} An emergency situation is an unscheduled electrical power outage caused by sudden and reasonably unforeseen natural disasters or sudden and reasonably unforeseen events beyond the control of the permittee. [District Rule 4702 and 17 CCR 93115]

16. {3808} This engine shall not be used to produce power for the electrical distribution system, as part of a voluntary utility demand reduction program, or for an interruptible power contract. [District Rule 4702 and 17 CCR 93115]

17. {3496} The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the date and number of hours of all testing and maintenance operations, the purpose of the operation (for example: load testing, weekly testing, rolling blackout, general area power outage, etc.) and records of operational characteristics monitoring. For units with automated testing systems, the operator may, as an alternative to keeping records of actual operation for testing purposes, maintain a readily accessible written record of the automated testing schedule. [District Rule 4702 and 17 CCR 93115]

18. {4775} This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 100 hours per calendar year. [District Rules 2201 and 4702]

19. {4263} The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]

20. {3475} All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93115]

# Appendix B
# BACT Guideline and BACT Analysis

# San Joaquin Valley
# Unified Air Pollution Control District

**Best Available Control Technology (BACT) Guideline 3.1.1**
**Last Update: 6/13/2019**
**Emergency Diesel IC Engine**

| Pollutant | Achieved in Practice or in the SIP | Technologically Feasible | Alternate Basic Equipment |
|---|---|---|---|
| CO | Latest EPA Tier Certification level for applicable horsepower range | | |
| NOX | Latest EPA Tier Certification level for applicable horsepower range | | |
| PM10 | 0.15 g/bhp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM) | | |
| SOX | Very low sulfur diesel fuel (15 ppmw sulfur or less) | | |
| VOC | Latest EPA Tier Certification level for applicable horsepower range | | |

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

# Top Down BACT Analysis for the Emergency IC Engine

## BACT at the Time of Installation

The engine proposed in this project was installed in Mid-2020, without an ATC permit. Pursuant to District practice regarding equipment that was installed without an ATC permit, if the equipment was installed with BACT (i.e. Achieved in Practice BACT at the time of installation), or if BACT did not exist at the time of installation, the current BACT anaylsis is limited to the types of controls that can be applied to the specific equipment that was already installed (i.e. add-on controls).

Since this engine was installed in mid-2020, it was subject to BACT guideline 3.1.1 Emergency Diesel IC Engine, (6/13/2019). A copy of this guideline is attached in this document above. As shown on the guideline, BACT for this engine at the time of installation was:

$NO_x$: Latest EPA Tier Certification level for applicable horsepower range

$PM_{10}$: 0.15 g/bhp-hr or Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent (ATCM)

VOC: Latest EPA Tier Certification level for applicable horsepower range

The engine is a Tier 2 certified unit. At the time this engine was installed (2020), the District had made a determination that Tier 4F certified engines were not readily available for bhp ratings greater than 750. Thus, at the time of installation in 2020, Tier 2 was the latest available certification standard for the proposed 768 bhp engine. The engine was therefore installed with BACT for $NO_x$ and VOC, and the current BACT analysis will be limited to the types of controls that can be applied to the engine that has already been installed (i.e. add-on controls)

### 1. BACT Analysis for NOx Emissions:

#### a. Step 1 - Identify all control technologies

BACT Guideline 3.1.1 identifies only the following option:

- $NO_x$: Latest EPA Tier Certification level for applicable horsepower range

No technologically feasible controls or alternate basic equipment are identified in the BACT guideline listed above.

The latest applicable Tier certification level is Tier 4F, with an emission standard of 0.5 g-$NO_x$/bhp-hr.[4] since the proposed engine has an emission rate of 3.87 g-$NO_x$/bhp-hr, it would need to be retrofitted with an add-control device in order to meet the latest tier certification standard. The installation of a selective catalytic reduction (SCR) system has been identified as an add-on control device that would lower NOx emission from the proposed engines to the Tier 4F emission levels:

- Selective Catalytic Reduction (SCR)

SCR decreases NOx emissions by using a catalyst and the injection of a reductant such as ammonia or urea to convert NOx into water and nitrogen. This is accomplished when the catalyst lowers the temperature of the reaction that is needed to convert NOx into water and nitrogen. Once the engine exhaust heats up to at least 260 $^oC$, the catalyst activates and the reductant is added into the exhaust stream. The aforementioned chemical reaction then takes place which reduces the NOx emissions by approximately 95%.

**b. Step 2 - Eliminate technologically infeasible options**

The control option listed in Step 1 is not technologically infeasible.

**c. Step 3 - Rank remaining options by control effectiveness**

Ranking is not necessary since there is only one control option listed in Step 1.

**d. Step 4 - Cost Effectiveness Analysis**

(A). Emission Reduction:

Based on the NOx potential emissions calculated in Section VII.C.2 of this evaluation and assuming a NOx conversion efficiency of 95%, the amount of NOx emissions reduction is calculated below:

NOx Emission Reductions = Annual $PE_{NOx}$ × 1 tons/2,000 lb × Overall Control Eff.
= 655 lb/year × 1 tons/2,000 lb × 0.95
= **0.31 ton/year**

(B). Total Capital Cost Investment (TCI)

Based on ARB's 2010 article titled "Analysis of the Technical Feasibility and Costs of After-Treatment Controls on New Emergency Standby Engines"[5], the average capital cost of installing an SCR system on an engine is $80/hp.

[4] https://ww2.arb.ca.gov/resources/documents/non-road-diesel-engine-certification-tier-chart

[5] https://ww2.arb.ca.gov/sites/default/files/classic/regact/2010/atcm2010/atcmappb.pdf

Based on the Consumer Price Index Inflation Calculator (https://www.bls.gov/data/inflation_calculator.htm), the average capital cost from 2010 is adjusted to $101.45 in December 2021.

In addition, according to the ARB's article identified above, this average capital cost does not include the cost of installation, which according to the SCR manufacturers could increase capital cost by 25% to over 100%. To be conservative, the District will assume a minimum 25% SCR installation cost. Thus:

Capital Cost of SCR per engine = Cost/hp x BHP rating = $101.45/hp x 768 bhp = $77,914

Cost of Installation per engine = SCR Cost x 25% = $77,914 x 0.25 = $19,479

Capital Investment per engine = SCR Cost + Cost of Installation
= $77,914+ $19,479
**= $97,393**

Annualized Capital Costs

Annualized Capital Investment = Total Capital Investment x Amortization Factor

Amortization Factor = $\frac{0.04(1.04)^{10}}{(1.04)^{10}-1}$ = 0.123 per District policy, amortizing over 10 years at 4%

Therefore, Annualized Capital Investment = $97,393 x 0.123 **= $11,979**

(C). Cost Effectiveness of a SCR with 95% Control

Cost Effectiveness = Annualized Capital Costs ($/year) ÷ Emission Reduction (ton-NOx/year)
= $11,979/year ÷ 0.31 ton-NOx/year
= $38,642 /ton-NOx

As shown above, the capital cost of SCR system with 95% capture efficiency is $38,642 per ton, which is greater than the District's NOx cost-effectiveness threshold of $31,600/ton. Therefore, the NOx control option is not cost effective and is being removed from consideration for this project.

**e. Step 5 - Select BACT**

BACT for NOx emissions from this emergency standby diesel IC engine is the latest EPA Tier Certification level, which was Tier 2 at the time of installation for the applicable horsepower range will be the use of an EPA Tier 2 certified engine. The applicant is proposing such a unit. Therefore, BACT will be satisfied.

## 2. BACT Analysis for $PM_{10}$ Emissions:

### a. Step 1 - Identify all control technologies

BACT Guideline 3.1.1 identifies only the following option:

- *0.15 g/bhp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM)*

No technologically feasible controls or alternate basic equipment are identified in the BACT guideline listed above.

The proposed Tier 2 IC engines have a PM emission factor of 0.08 g-PM/hp-hr. The engines' proposed $PM/PM_{10}$ emission factor of 0.08 g-PM/hp-hr meets the listed BACT requirement of 0.15 g-PM/hp-hr; however, the engine does not meet the more stringent latest applicable Tier certification level of 0.02 g-PM/bhp-hr (Tier 4F). Therefore, the engines would need to be retrofitted with an add-on control device in order to meet the Tier 4F emission limit of 0.02 lb-PM/bhp-hr. The installation of a diesel particulate filter (DPF) has been identified as an add-on control device that would lower PM10 emission from the proposed engines to the Tier 4F emission levels:

- Installing a diesel particulate filter (DPF) to the diesel exhaust system

The DPF's primary function is to decrease the level of $PM_{10}$ emissions produced by an engine. This is accomplished through the use of the DPF's porous filter which allows gases to pass through while capturing solid materials. DPFs can lower PM10 emissions from engines by 85%.

### b. Step 2 - Eliminate technologically infeasible options

The control option listed in Step 1 is not technologically infeasible.

### c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because there is only one control option listed in Step 1.

### d. Step 4 - Cost Effectiveness Analysis

(A). Emission Reduction:

Based on the above determined project emissions and assuming a $PM_{10}$ conversion efficiency of 85% the amount of $PM_{10}$ emissions reduced is calculated below.

$PM_{10}$ Emission Reductions = Annual $PE_{PM10} \times$ 1 tons/2,000 lb $\times$ Overall Control Eff.
= 14 lb/year $\times$ 1 tons/2,000 lb $\times$ 0.85
= **0.006 ton/year**

(B). Total Capital Cost Investment (TCI)

In the 2010 ARB article titled "Analysis of the Technical Feasibility and Costs of After-Treatment Controls on New Emergency Standby Engines"[6] The cost of installing a DPF on an engine is $39/hp which includes price of installation. However, based on the Consumer Price Index Inflation Calculator (https://www.bls.gov/data/inflation_calculator.htm), from the year the article was written in 2010 to December 2021, the cost/hp of the DPF has increased to $50.

DPF Cost per engine= Cost/hp x BHP rating = $50/hp x 768 bhp = $38,400

Capital Investment per engine **=** $38,400

Annualized Capital Costs

Annualized Capital Investment = Total Capital Investment x Amortization Factor

Amortization Factor = $\frac{0.04(1.04)^{10}}{(1.04)^{10}-1}$ = 0.123 per District policy, amortizing over 10 years at 4%

Therefore, Annualized Capital Investment = $38,400 x 0.123 **= $4,723**

(C). Cost Effectiveness of a DPF with 85% Capture

Cost Effectiveness = Annualized Capital Costs ($/year) ÷ Emission Reduction (ton-$PM_{10}$/year)
= $4,723/year÷ 0.006 ton-$PM_{10}$/year
= $787,167/ton-$PM_{10}$

The cost to operate a DPF with 85% capture efficiency is $787,167 per ton, which is greater than the District's $PM_{10}$ cost-effectiveness threshold of $11,400/ton. Therefore, the $PM_{10}$ control option is not cost effective and is being removed from consideration for this project.

**e. Step 5 - Select BACT**

BACT for PM10 is emissions of 0.15 g/hp-hr or less. The applicant is proposing an engine that meets this requirement. Therefore, BACT will be satisfied.

[6] https://ww2.arb.ca.gov/sites/default/files/classic/regact/2010/atcm2010/atcmappb.pdf

## 3. BACT Analysis for VOC Emissions:

### a. Step 1 - Identify all control technologies

BACT Guideline 3.1.1 identifies only the following option:

- Latest EPA Tier certification level for applicable horsepower range (Achieved in Practice)

No technologically feasible controls or alternate basic equipment are identified in the BACT guideline listed above.

The proposed Tier 2 IC engine has a VOC emission factor of 0.12 g-VOC/bhp-hr. The latest available Tier certification level is Tier 4F, with an emission rate of 0.14 g-VOC/bhp-hr. While the proposed engine meets the emission rate for a Tier 4F certified emergency IC engine, it does not meet the BACT requirement of Tier 4F certification level, as the engine is certified as a Tier 2. Therefore, the engine would need to be retrofitted with an add-on control device. The installation of a diesel oxidation catalyst (DOC) has been identified as an add-on control device that would lower VOC emission from the proposed engines to the Tier 4F emission levels:

- Installing a Diesel Oxidation Catalyst (DOC) to the diesel exhaust system

A DOC's primary function is to decrease the level of VOC emissions produced by an engine. DOCs generally consist of a precious metal coated flow-through honeycomb structure contained in a steel housing. Diesel fuel passes through this precious metal coating and a catalytic reaction occurs that breaks down the VOCs in the fuel into less harmful pollutants. DOCs can lower VOC emissions from engines by 50%.

### b. Step 2 - Eliminate technologically infeasible options

The control option listed in Step 1 is not technologically infeasible.

### c. Step 3 - Rank remaining options by control effectiveness

No ranking needs to be done because there is only one control option identified in Step 1.

### d. Step 4 - Cost Effectiveness Analysis

<u>(A). Emission Reduction:</u>

Based on the VOC potential emissions calculated in Section VII.C.2 of this evaluation and assuming a VOC conversion efficiency of 50%[7], the amount of VOC emissions reduction is calculated below:

VOC Emission Reductions = Annual $PE_{VOC}$ × 1 tons/2,000 lb × Overall Control Eff.
= 20 lb/year × 1 tons/2,000 lb × 0.50
= **0.005 ton/year**

(B). Total Capital Cost Investment (TCI)

Based on ARB's 2004 PowerPoint titled "Public Hearing to Consider the Adoption of the Airborne Toxic Control Measure to Reduce Diesel Particulate Matter Emissions from Station Engines", the estimated capital cost of a DOC is $10/Hp.

Based on the Consumer Price Index Inflation Calculator (https://www.bls.gov/data/inflation_calculator.htm), the average capital cost from 2004 is adjusted to $14.55 in December 2021.

DOC Capital Cost per engine = Cost/hp x BHP rating = $14.55/hp x 768bhp = $11,174

Annualized Capital Costs

Annualized Capital Investment = Total Capital Investment x Amortization Factor

Amortization Factor = $\frac{0.04(1.04)^{10}}{(1.04)^{10}-1}$ = 0.123 per District policy, amortizing over 10 years at 4%

Therefore, Annualized Capital Investment = $11,174 x 0.123 **= $1,374**

(D). Cost Effectiveness of a DOC with 50% Capture

Cost Effectiveness = Annualized Capital Costs ($/year) ÷ Emission Reduction (ton-VOC/year) = $1,374/year÷ 0.005 ton-VOC/year
= $274,800/ton-VOC

As shown above, the capital cost of DOC system with 50% capture efficiency is $274,800 per ton, which is greater than the District's VOC cost-effectiveness threshold of $22,600/ton. Therefore, the VOC control option is not cost effective and is being removed from further consideration for this project.

[7] Based on the article, *Update on Emissions - Form 960, Second Edition, Waukesha Engine Division, Dresser Industries, October, 1991*, VOC reductions due to the installation of a catalyst are 50%.

**e. Step 5 - Select BACT**

BACT for VOC emissions from these emergency standby diesel IC engines is the latest EPA Tier Certification level, which was Tier 2 at the time of installation for the applicable horsepower range. As discussed above, retrofitting the engines with an add-on control device (DOC) to meet the current applicable Tier certification (Tier 4F), is not a cost effective option. Thus, pursuant to District practice regarding equipment that was installed without an ATC permit, Tier 2 certification as proposed satisfies BACT for these engines.

# Appendix C
# Emissions Data Sheet

VOLVO PENTA

NO: 164005

# EXHAUST EMISSION DECLARATION

The emission data in this declaration are measured according to the test procedures specified below and on one member engine of the engine type. Emission data may vary among production engines.

## TECHNICAL SPECIFICATION

| | |
|---|---|
| Engine type: | TAD1641GE |
| Specification: | 869252 / 869253 |
| Module No: | 138052004 |
| Rated crankshaft power *): | 565 kW |
| Rated speed: | 1800 rpm |

*) The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271.

## TEST INFORMATION

| | |
|---|---|
| Test conditions | 40 CFR part 89 |
| Test indentification | 27001877 |
| Test date | May 19, 2004 |
| Test cycle | 5-mode US constant speed test cycle |

## EXHAUST EMISSIONS (weighted cycle)

| | |
|---|---|
| CO (g/kWh) | 0,69 |
| HC (g/kWh) | 0,16 |
| NOx (g/kWh) | 5,19 |
| PM (g/kWh) | 0,112 |

## EXHAUST EMISSIONS (per cycle mode)

| Mode | # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| Power | (kW) | 570,1 | 427,5 | 285 | 142,6 | 57,2 | | | |
| NOx | (g/h) | 2957 | 2165 | 1481 | 749 | 408 | | | |
| HC | (g/h) | 35 | 37 | 46 | 46 | 55 | | | |
| CO | (g/h) | 1084 | 232 | 84 | 107 | 177 | | | |
| PM | (g/h) | 80,7 | 29,5 | 20,5 | 18,9 | 27 | | | |
| $CO_2$ | (g/h) | 395353 | 284484 | 189290 | 104803 | 57109 | | | |
| NOx | (ppm) | 649 | 547 | 493 | 360 | 247 | | | |
| HC | (ppm) | 22 | 27 | 45 | 64 | 100 | | | |
| CO | (ppm) | 366 | 90 | 43 | 79 | 165 | | | |
| $CO_2$ | (%) | 8,38 | 6,94 | 6,07 | 4,85 | 3,34 | | | |
| $O_2$ | (%) | 9,19 | 11,14 | 12,32 | 14 | 16,08 | | | |
| NOx | ($mg/Nm^3$) | 1802 | 1820 | 1860 | 1683 | 1648 | | | |
| HC | ($mg/Nm^3$) | 17 | 25 | 48 | 85 | 188 | | | |
| CO | ($mg/Nm^3$) | 620 | 183 | 99 | 225 | 671 | | | |
| $CO_2$ | ($mg/Nm^3$) | - - | - - | - - | - - | - - | | | |
| Soot | ($mg/Nm^3$) | 27 | 11 | 8 | 13 | 25 | | | |

## SMOKE

Opacity (%): Acc: n.a., Lug: n.a., Peak: n.a.

Gothenburg 2005-07-07

Sam Bohrnauer

AB Volvo Penta
Product Liability
40508 Gothenburg

# Appendix D
# Technical Services Memo and AAQA

# San Joaquin Valley Air Pollution Control District
# Risk Management Review and Ambient Air Quality Analysis

| | |
|---|---|
| To: | Entor Pineda – Permit Services |
| From: | Michael Scott – Technical Services |
| Date: | January 3, 2022 |
| Facility Name: | JOSE SOARES DAIRY |
| Location: | 19155 ROAD 1, CHOWCHILLA, CA |
| Application #(s): | C-7180-11-0 |
| Project #: | C-1212881 |

## 1. Summary

### 1.1 RMR

| Units | Prioritization Score | Acute Hazard Index | Chronic Hazard Index | Maximum Individual Cancer Risk | T-BACT Required | Special Permit Requirements |
|---|---|---|---|---|---|---|
| 11 | 3.56E-01 | NA[1] | 0.00 | 8.35E-08 | No | Yes |
| **Project Totals** | 3.56E-01 | NA[1] | 0.00 | 8.35E-08 | | |
| **Facility Totals** | >1 | 0.55 | 0.00 | 7.68E-07 | | |

Notes:
1. Acute Hazard Index was not calculated for Unit 11 since there is no risk factor or the risk factor is so low that it has been determined to be insignificant for this type of unit.

### 1.2 AAQA

| Pollutant | Air Quality Standard (State/Federal) | | | | |
|---|---|---|---|---|---|
| | 1 Hour | 3 Hours | 8 Hours | 24 Hours | Annual |
| **CO** | NA[2] | | NA[2] | | |
| **$NO_x$** | NA[2] | | | | Pass |
| **$SO_x$** | NA[2] | NA[2] | | NA[2] | Pass |
| **PM10** | | | | NA[2] | Pass[4] |
| **PM2.5** | | | | NA[2] | Pass[5] |

Notes:
1. Results were taken from the attached AAQA Report.
2. The project is an intermittent source as defined in APR-1920. In accordance with APR-1920, compliance with short-term (i.e., 1-hour, 3-hour, 8-hour and 24-hour) standards is not required.
3. The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2) unless otherwise noted below.
4. Modeled PM10 concentrations were below the District SIL for non-fugitive sources of 5 $\mu g/m^3$ for the 24-hour average concentration and 1 $\mu g/m^3$ for the annual concentration.
5. Modeled PM2.5 concentrations were below the District SIL for non-fugitive sources of 1.2 $\mu g/m^3$ for the 24-hour average concentration and 0.2 $\mu g/m^3$ for the annual concentration.

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 11

1. The $PM_{10}$ emissions rate shall not exceed 0.08 g/bhp-hr based on US EPA certification using ISO 8178 test procedure.
2. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction.
3. This engine shall be operated only for testing and maintenance of the engine, required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 100 hours per calendar year.

## 2. Project Description

Technical Services received a request on December 30, 2021 to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for the following:

- Unit-11-0: 768 BHP (INTERMITTENT) VOLVO MODEL TAD1642GE TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY STANDBY IC ENGINE POWERING AN ELECTRICAL GENERATOR

## 3. RMR Report

### 3.1 Analysis

The District performed an analysis pursuant to the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015) to determine the possible cancer and non-cancer health impact to the nearest resident or worksite. This policy requires that an assessment be performed on a unit by unit basis, project basis, and on a facility-wide basis. If a preliminary prioritization analysis demonstrates that:

- A unit's prioritization score is less than the District's significance threshold and;
- The project's prioritization score is less than the District's significance threshold and;
- The facility's total prioritization score is less than the District's significance threshold

Then, generally no further analysis is required.

The District's significant prioritization score threshold is defined as being equal to or greater than 1.0. If a preliminary analysis demonstrates that either the unit's or the project's or the facility's total prioritization score is greater than the District threshold, a screening or a refined assessment is required

If a refined assessment is greater than one in a million but less than 20 in one million for carcinogenic impacts (Cancer Risk) and less than 1.0 for the Acute and Chronic hazard indices (Non-Carcinogenic) on a unit by unit basis, project basis and on a facility-wide basis the proposed application is considered less than significant. For unit's that exceed a cancer risk of 1 in one million, Toxic Best Available Control Technology (TBACT) must be implemented.

Toxic emissions for this project were calculated using the following methods:

- Toxic emissions for the proposed unit were calculated and provided by the processing engineer.

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks

from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for 2004-2008 from Los Banos (rural dispersion coefficient selected) to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

| Source Process Rates | | | | | |
|---|---|---|---|---|---|
| **Unit ID** | **Process ID** | **Process Material** | **Process Units** | **Hourly Process Rate** | **Annual Process Rate** |
| 11 | 1 | PM10 | LBS | 0.1375 | 14 |

## 4. AAQA Report

The District modeled the impact of the proposed project on the National Ambient Air Quality Standard (NAAQS) and/or California Ambient Air Quality Standard (CAAQS) in accordance with District Policy APR-1925 (Policy for District Rule 2201 AAQA Modeling) and EPA's Guideline for Air Quality Modeling (Appendix W of 40 CFR Part 51). The District uses a progressive three level approach to perform AAQAs. The first level (Level 1) uses a very conservative approach. If this analysis indicates a likely exceedance of an AAQS or Significant Impact Level (SIL), the analysis proceeds to the second level (Level 2) which implements a more refined approach. For the 1-hour $NO_2$ standard, there is also a third level that can be implemented if the Level 2 analysis indicates a likely exceedance of an AAQS or SIL.

The modeling analyses predicts the maximum air quality impacts using the appropriate emissions for each standard's averaging period. Required model inputs for a refined AAQA include background ambient air quality data, land characteristics, meteorological inputs, a receptor grid, and source parameters including emissions. These inputs are described in the sections that follow.

Ambient air concentrations of criteria pollutants are recorded at monitoring stations throughout the San Joaquin Valley. Monitoring stations may not measure all necessary pollutants, so background data may need to be collected from multiple sources. The following stations were used for this evaluation:

| Monitoring Stations | | | | |
|---|---|---|---|---|
| **Pollutant** | **Station Name** | **County** | **City** | **Measurement Year** |
| NOx | Merced-Coffee | Merced | Merced | 2018 |
| PM10 | 2334 'M' ST. | Merced | Merced | 2018 |
| PM2.5 | Merced-Coffee | Merced | Merced | 2018 |
| SOx | Fresno - Garland | Fresno | Fresno | 2018 |

Technical Services performed modeling for directly emitted criteria pollutants with the emission rates below:

| Emission Rates (lbs/hour) | | | | | | |
|---|---|---|---|---|---|---|
| **Unit ID** | **Process** | **NOx** | **SOx** | **CO** | **PM10** | **PM2.5** |
| 11 | 1 | 6.55 | 0.008 | 0.8625 | 0.1375 | 0.1375 |

| Emission Rates (lbs/year) | | | | | | |
|---|---|---|---|---|---|---|
| **Unit ID** | **Process** | **NOx** | **SOx** | **CO** | **PM10** | **PM2.5** |
| 11 | 1 | 655 | 1 | 86 | 14 | 14 |

The AERMOD model was used to determine if emissions from the project would cause or contribute to an exceedance of any state of federal air quality standard. The parameters outlined below and meteorological data for 2004-2008 from Los Banos (rural dispersion coefficient selected) were used for the analysis:

The following parameters were used for the review:

| Point Source Parameters | | | | | | |
|---|---|---|---|---|---|---|
| **Unit ID** | **Unit Description** | **Release Height (m)** | **Temp. (°K)** | **Exit Velocity (m/sec)** | **Stack Diameter (m)** | **Vertical/ Horizontal/ Capped** |
| 11 | 768 bhp DICE | 1.83 | 751 | 226.97 | 0.102 | Vertical |

## 5. Conclusion

### 5.1 RMR

The cumulative acute and chronic indices for this facility, including this project, are below 1.0; and the cumulative cancer risk for this facility, including this project, is less than 20 in a million. In addition, the cancer risk for each unit in this project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit requirements listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

### 5.2 AAQA

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

## 6. Attachments

A. Modeling request from the project engineer

B. Additional information from the applicant/project engineer

C. Prioritization score w/ toxic emissions summary

D. Facility Summary

E. AAQA results

# Appendix E
# QNEC Calculations

## Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr
PE2 = Post-Project Potential to Emit for each emissions unit, lb/qtr
PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr

Since this is a new unit, PE1 = 0 for all pollutants. Thus, QNEC = PE2 (lb/qtr).

Using the PE2 (lb/yr) values calculated in Section VII.C.2, Quarterly PE2 is calculated as follows:

$PE2_{quarterly}$ = PE2 (lb/yr) ÷ 4 quarters/year = QNEC

| QNEC | | |
|---|---|---|
| Pollutant | PE2 Total (lb/yr) | Quarterly PE2 (lb/qtr) |
| $NO_X$ | 655 | 163.75 |
| $SO_X$ | 1 | 0.25 |
| $PM_{10}$ | 14 | 3.5 |
| CO | 86 | 21.5 |
| VOC | 20 | 5.0 |