AUG 0 4 2014

Robbie Cooper
Merced Irrigation District
P O Box 228
Merced, CA 95344

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: N-9037
Project Number: N-1142622

Dear Mr. Cooper:

Enclosed for your review and comment is the District's analysis of Merced Irrigation District's application for an Authority to Construct for the installation of a 900 bhp diesel-fired emergency engine powering an electrical generator, located at 1901 Hayden Road, Legrand.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. 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. Fred Cruz of Permit Services at (209) 557-6456.

Sincerely,

Arnaud Marjollet
Director of Permit Services

AM:fjc/ya

Enclosures

cc: Mike Tollstrup, CARB (w/ enclosure) via email
San Joaquin Valley Air Pollution Control District
Authority to Construct Application Review
Diesel-fired Emergency Standby IC Engine

Facility Name: Merced Irrigation District
Date: July 21, 2014
Engineer: Fred Cruz

Mailing Address: PO Box 2288
Merced, CA 95344
Lead Engineer: Mark Schonhoff

Contact Person: Rich Hodge (Industrial Electrical Company)
Telephone: (209) 652-8282
Email: rhodge@iecmail.com

Application No: N-9037-1-0
Project No: N-1142622
Complete: July 7, 2014

I. Proposal:

Industrial Electrical Company, on behalf of Merced Irrigation District, submitted an Authority to Construct (ATC) application to install a 900 bhp diesel-fired emergency standby internal combustion (IC) engine powering an electrical generator.

II. Applicable Rules:

Rule 2201 New and Modified Stationary Source Review Rule (4/21/2011)
Rule 2410 Prevention of Significant Deterioration (6/16/2011)
Rule 2520 Federally Mandated Operating Permits (6/21/2001)
Rule 4001 New Source Performance Standards (4/14/1999)
Rule 4101 Visible Emissions (2/17/2005)
Rule 4102 Nuisance (12/17/1992)
Rule 4201 Particulate Matter Concentration (12/17/1992)
Rule 4701 Stationary Internal Combustion Engines – Phase 1 (8/21/2003)
Rule 4702 Stationary Internal Combustion Engines – Phase 2 (1/18/2007)
Rule 4801 Sulfur Compounds (12/17/1992)
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 facility is located at 1901 Hayden Road, Legrand, 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 does not apply to this project.

IV. Process Description:

The emergency standby engine powers an electrical generator. Other than emergency operation, the engine may be operated up to 50 hours per year for maintenance and testing purposes.

V. Equipment Listing:

N-9037-1-0: 900 BHP CATERPILLAR MODEL C18 DIESEL-FIRED EMERGENCY ENGINE (TIER 2 CERTIFIED) POWERING AN ELECTRICAL GENERATOR.

VI. Emission Control Technology Evaluation:

The applicant has proposed to install a 2014 Model Year Tier 2 certified diesel-fired IC engine that is fired on very low-sulfur diesel fuel (0.0015% by weight sulfur maximum).

NOx, CO, VOC and PM10:
The proposed engine does not meet the latest published Tier Certification requirements. However, compliance with both BACT and CARB's stationary ATCM requirements will be met as described below (see Appendix B for a copy of the emissions data sheet for this engine).

Although Tier 4i requirements for this category of engine went into effect in 2012, CARB regulations and District policy allows for the availability of Tier 4i units to be accounted for. CARB's Stationary ATCM exemption §93115.3(u) states, "If the Executive Officer or District finds, based on verifiable information from the engine manufacturer, distributor or dealer, that current model year engines meeting the current emission standards are not available or not available in sufficient numbers or in a sufficient range of makes, models and horsepower ratings, then the Executive Officer or the District may allow the sale, purchase or installation of a new stock engine meeting the emission standards from the previous model year to meet the new stationary diesel-fueled engine emission standards pursuant to title 13 of the California Code of Regulations or 40 CFR part 89." The District has thoroughly investigated, with each of the common engine manufacturers, the availability of Tier 4i units in this size range and has found them to be currently unavailable. Since Tier 4i units are not available, as described above, the installation of a Tier 2 unit is acceptable, as Tier 2 is the prior published Tier in this engine's size range.

SOx:
The use of very low-sulfur diesel fuel (0.0015% by weight sulfur maximum) reduces SOx emissions by over 99% from standard diesel fuel.
VII. General Calculations:

A. Assumptions:

- Operating schedule: 24 hours/day, 50 hours/year
- Density of diesel fuel: 7.1 lb/gal
- EPA F-factor: 9051 dscf/ MMBtu (corrected to 60°F)
- PM10 fraction of diesel exhaust is 96% (Reference - CARB, 1988)
- Fuel heating value: 137,000 Btu/gal
- BHP to Btu/hr conversion: 2542.5 Btu/hp-hr
- Thermal efficiency of engine: commonly ~ 35%
- Fuel rate: 42.7 gal/hr @ 100% load (engine data sheet)

B. Emission Factors:

The applicant supplied the emissions factor for NO\textsubscript{x} and VOC emissions as a combined emission factor. Therefore, the District will use data from the EPA document "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compressions Ignition", dated November 2002, as presented in the following table to estimate NO\textsubscript{x} and VOC emissions (District assumption).

<table>
<thead>
<tr>
<th>Horsepower Range (bhp)</th>
<th>Combined Standard, NO\textsubscript{x} + VOC (g/bhp-hr)</th>
<th>Estimated NO\textsubscript{x} Emissions (g/bhp-hr)</th>
<th>Estimated VOC Emissions (g/bhp-hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 50 to &lt; 100</td>
<td>5.6</td>
<td>5.2</td>
<td>0.4</td>
</tr>
<tr>
<td>≥ 100 to &lt; 175</td>
<td>4.9</td>
<td>4.5</td>
<td>0.4</td>
</tr>
<tr>
<td>≥ 175 to &lt; 300</td>
<td>4.9</td>
<td>4.5</td>
<td>0.4</td>
</tr>
<tr>
<td>≥ 300 to &lt; 600</td>
<td>4.8</td>
<td>4.5</td>
<td>0.3</td>
</tr>
<tr>
<td>≥ 600 to &lt; 750</td>
<td>4.8</td>
<td>4.5</td>
<td>0.3</td>
</tr>
<tr>
<td>≥ 750</td>
<td>4.8</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

This 900 bhp engine is a Tier 2 certified IC engine and the applicant supplied the combined NO\textsubscript{x} + VOC emissions factor as 4.33 g/bhp-hr (5.8 g/kwh-hr certified). Therefore, the NO\textsubscript{x} and VOC emissions factors are calculated as follows:

\[
\text{NO}_x (g/bhp-hr) = \text{NO}_x + \text{VOC} (g/bhp-hr) \times (4.5 \text{ g/bhp-hr} + 4.8 \text{ g/bhp-hr})
\]
\[
\text{NO}_x \text{ g/bhp-hr} = 4.33 \text{ g/bhp-hr} \times (4.5 \text{ g/bhp-hr} + 4.8 \text{ g/bhp-hr})
\]
\[
\text{NO}_x = 4.06 \text{ g/bhp-hr}
\]

\[
\text{VOC} (g/bhp-hr) = \text{NO}_x + \text{VOC} (g/bhp-hr) \times (0.3 \text{ g/bhp-hr} + 4.8 \text{ g/bhp-hr})
\]
\[
\text{VOC \ g/bhp-hr} = 4.33 \text{ g/bhp-hr} \times (0.3 \text{ g/bhp-hr} + 4.8 \text{ g/bhp-hr})
\]
\[
\text{VOC} = 0.27 \text{ g/bhp-hr}
\]
Emission Factor (g/bhp-hr) | Source
---|---
NOx | 4.06 | Engine manufacturer
CO | 0.60 | Engine manufacturer
VOC | 0.27 | Engine manufacturer
PM10 | 0.06 | Engine manufacturer
SOx | 0.005 | Calculated below

The emission factor for SOx may be calculated based on the current CARB standard for diesel sulfur content, which is 15 ppm by weight.

\[
\text{lb} \cdot \text{fuel} \times \frac{7.11 \text{ lb}}{\text{gallon}} \times \frac{2.3 \text{ lb}}{\text{SO}_x} \times \frac{1 \text{ gallon}}{137,900 \text{ Btu}} \times \frac{0.35 \text{ bhp input}}{1 \text{ bhp input}} \times \frac{2,542.5 \text{ Btu}}{1 \text{ lb}} \times \frac{1 \text{ lb}}{453.6 \text{ g}} \times \frac{0.005 \text{ g}}{1 \text{ bhp-hr}} = \frac{X \text{ lb}}{\text{bhp-hr}}
\]

C. Calculations

1. Pre-Project Emissions (PE1)

Since this is a new emissions unit, PE1 will equal zero for all pollutants.

2. Post Project PE (PE2)

The potential to emit emissions from this emergency IC engine is based on the maximum operating capacity of the engine for 24 hours per day. The following calculation for NOx emissions is representative of emission calculations for all pollutants. Annual emissions are based on 50 hours per year for non-emergency operation.

\[
\begin{align*}
\text{NOx:} & \quad 4.06 \text{ g/hp-hr} \times 900 \text{ hp} \times \frac{1 \text{ lb}}{453.6 \text{ g}} \\
\text{NOy:} & \quad 8.06 \text{ lb/hr}, 193.3 \text{ lb/day}, 403 \text{ lb/yr} \\
\text{CO:} & \quad 1.19 \text{ lb/hr}, 28.6 \text{ lb/day}, 60 \text{ lb/yr} \\
\text{VOC:} & \quad 0.54 \text{ lb/hr}, 12.9 \text{ lb/day}, 27 \text{ lb/yr} \\
\text{PM}_{10}: & \quad 0.12 \text{ lb/hr}, 2.9 \text{ lb/day}, 6 \text{ lb/yr} \\
\text{SOx:} & \quad 0.01 \text{ lb/hr}, 0.2 \text{ lb/day}, 1 \text{ lb/yr}
\end{align*}
\]

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

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid ATCs or PTOs at the Stationary Source and the quantity of Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual
Emissions Reductions that have occurred at the source, and which have not been used on-site. Since this is a new emissions unit at a new facility, SSPE1 is equal to zero for all pollutants.

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

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (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 Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

<table>
<thead>
<tr>
<th>Permit No.</th>
<th>NOx</th>
<th>CO</th>
<th>VOC</th>
<th>PM10</th>
<th>SOx</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-9037-1-0</td>
<td>403</td>
<td>60</td>
<td>27</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>403</td>
<td>60</td>
<td>27</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

5. 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 are not 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

<table>
<thead>
<tr>
<th>Rule 2201 Major Source Determination (lb/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
</tr>
<tr>
<td>Facility emissions pre-project</td>
</tr>
<tr>
<td>Facility emissions - post project</td>
</tr>
<tr>
<td>Major Source Threshold</td>
</tr>
<tr>
<td>Major Source?</td>
</tr>
</tbody>
</table>

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 or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.

<table>
<thead>
<tr>
<th>PSD Major Source Determination (tons/year)</th>
<th>NO₂</th>
<th>VOC</th>
<th>SO₂</th>
<th>CO</th>
<th>PM</th>
<th>PM₁₀</th>
<th>CO₂e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Facility PE before Project Increase</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PSD Major Source Thresholds</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>100,000</td>
<td></td>
</tr>
<tr>
<td>PSD Major Source? (Y/N)</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

As shown above, the facility is not an existing major source for PSD for any pollutant.


BE will equal the Pre-project Potential to Emit for:
- Clean Emissions 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 Unit, located at a Major Source.

Otherwise, BE equals the Historic Actual Emissions (HAE), calculated pursuant to Section 3.22 of District Rule 2201.

As shown in Section VII.C.5 above, the facility is not a Major Source for any pollutant. Therefore, Baseline Emissions (BE) are equal to the Pre-Project Potential to Emit (PE1).

7. SB 288 Major Modification:

SB 288 Major Modification is defined in Rule 2201. As discussed in Section VII.C.5 above, the facility is not a Major Source for any pollutant. Therefore, the project does not constitute a SB 288 Major Modification.

8. Federal Major Modification:

Federal Major Modification is defined in Rule 2201. As discussed in Section VII.C.5 above, the facility is not a Major Source for any pollutant. Therefore, the project does not constitute a Federal Major Modification.
9. 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 C.

10. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination:

Rule 2410 applies to pollutants for which the District is in attainment or for unclasssified pollutants. The pollutants addressed in the PSD applicability determination are listed as follows:

- NO₂ (as a primary pollutant)
- SO₂ (as a primary pollutant)
- CO
- PM
- PM₁₀
- Greenhouse gases (GHG): CO₂, N₂O, CH₄, HFCs, PFCs, and SF₆

The first step of this PSD applicability evaluation consists of determining whether the facility is an existing PSD Major Source. This facility is not an existing PSD Major source (See Section VII.C.5 of this document). The second step of the PSD evaluation is to determine if the project, by itself, would be a PSD major source.

Potential to Emit for New or Modified Emission Units vs PSD Major Source Thresholds:

As a screening tool, the project potential to emit from all new and modified units is compared to the PSD major source threshold and if the total project potential to emit from all new and modified units is below this threshold, no further analysis will be needed.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.
<table>
<thead>
<tr>
<th>PSD Major Source Determination: Potential to Emit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(tons/year)</td>
</tr>
<tr>
<td>NO₂</td>
</tr>
<tr>
<td>Total PE from New and Modified Units</td>
</tr>
<tr>
<td>PSD Major Source threshold</td>
</tr>
<tr>
<td>New PSD Major Source?</td>
</tr>
</tbody>
</table>

* GHG emissions equal: (900 bhp × 50 hr/yr × 0.000187 metric tonnes CO₂e/MBtu) = 8.42 metric tonnes CO₂e/yr

(8.42 metric tons CO₂e × 2,205 lbs/metric ton) + 2,000 lbs/ton = 9.28 tons CO₂e

As shown in the table above, the project potential to emit, by itself, does not exceed any of the PSD major source thresholds. Therefore, Rule 2410 is not applicable and no further discussion is required.

VIII. COMPLIANCE

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 2.0 pounds per day,
   b) The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding 2.0 pounds per day,
   c) Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding 2.0 pounds per day, and/or
   d) Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

   *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.

   a. New emissions units – PE > 2.0 lb/day

   This engine is considered as a new emissions unit and the daily emissions are compared to the BACT thresholds in the following table:
BACT will be triggered for NOx, PM10 and VOC emissions.

b. Relocation of emissions units – PE > 2.0 lb/day

This engine is not being relocated from one stationary source to another stationary source as a result of this project.

c. Modification of emissions units – Adjusted Increase in Permitted Emissions (AIME) > 2.0 lb/day

This engine is not being modified. Therefore, BACT is not triggered for the modification of emissions units with an AIPE > 2.0 lb/day.

d. Major Modification

This project does not constitute a Major Modification. Therefore, BACT is not triggered for a Major Modification.

2. BACT Guideline

BACT Guideline 3.1.1, which appears in Appendix D 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 D of this report, BACT is satisfied with:

- NOx, VOC: Tier 2 engine
- PM10: 0.15 g/bhp-hr
B. Offsets

Since emergency standby IC engines are exempt from the offset requirements of Rule 2201, per Section 4.6.2, offsets are not required for this engine and offset calculations are not required.

C. Public Notification

1. Applicability

Public noticing is required for:
- a. New Major Sources, which is a new facility that also becomes a Major Source,
- b. Major Modifications,
- c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- d. Any project which results in the offset thresholds being surpassed, and/or
- e. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.

a. New Major Source:

A New Major Source is a new facility which also becomes a major source. This new facility does not become a Major Source as a result of this project and New Major Source public noticing is not required.

b. Major Modification:

As demonstrated previously in Sections VII.C.7 and VII.C.8, this project does not constitute a Major Modification. Therefore, public noticing for Major Modification purposes is not required.

c. PE > 100 lb/day:

The Daily PE for this new emissions unit is compared to the daily PE Public Notice Thresholds in the following table:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Daily PE for unit -1-0 (lb/day)</th>
<th>Public Notice Threshold (lb/day)</th>
<th>Public Notice Triggered?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOX</td>
<td>193.3</td>
<td>100</td>
<td>Yes</td>
</tr>
<tr>
<td>SOX</td>
<td>0.2</td>
<td>100</td>
<td>No</td>
</tr>
<tr>
<td>PM10</td>
<td>2.9</td>
<td>100</td>
<td>No</td>
</tr>
<tr>
<td>CO</td>
<td>28.6</td>
<td>100</td>
<td>No</td>
</tr>
<tr>
<td>VOC</td>
<td>12.9</td>
<td>100</td>
<td>No</td>
</tr>
</tbody>
</table>
As detailed in the preceding table, daily emissions for NOx exceed the 100 lb/day threshold and public noticing is required for this project.

d. Offset Threshold:

The following table compares the SSPE1 and SSPE2 with the offset thresholds to determine if any offset thresholds have been surpassed.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>SSPE1 (lb/yr)</th>
<th>SSPE2 (lb/yr)</th>
<th>Offset Threshold (lb/yr)</th>
<th>Public Notice Required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>0</td>
<td>403</td>
<td>20,000</td>
<td>No</td>
</tr>
<tr>
<td>SOx</td>
<td>0</td>
<td>1</td>
<td>54,750</td>
<td>No</td>
</tr>
<tr>
<td>PM_{10}</td>
<td>0</td>
<td>6</td>
<td>29,200</td>
<td>No</td>
</tr>
<tr>
<td>CO</td>
<td>0</td>
<td>60</td>
<td>200,000</td>
<td>No</td>
</tr>
<tr>
<td>VOC</td>
<td>0</td>
<td>27</td>
<td>20,000</td>
<td>No</td>
</tr>
</tbody>
</table>

As detailed in the preceding table, there were no offset thresholds surpassed with this project. Therefore, public noticing is not required for this project.

e. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e. SSIPE = SSPE2 - SSPE1. The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>SSPE2 (lb/yr)</th>
<th>SSPE1 (lb/yr)</th>
<th>SSIPE (lb/yr)</th>
<th>SSIPE Threshold (lb/yr)</th>
<th>Public Notice Required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>403</td>
<td>0</td>
<td>403</td>
<td>20,000</td>
<td>No</td>
</tr>
<tr>
<td>SOx</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>20,000</td>
<td>No</td>
</tr>
<tr>
<td>PM_{10}</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>20,000</td>
<td>No</td>
</tr>
<tr>
<td>CO</td>
<td>60</td>
<td>0</td>
<td>60</td>
<td>20,000</td>
<td>No</td>
</tr>
<tr>
<td>VOC</td>
<td>27</td>
<td>0</td>
<td>27</td>
<td>20,000</td>
<td>No</td>
</tr>
</tbody>
</table>
As detailed in the preceding table, there are no SSIPE thresholds surpassed with this project. Therefore, public noticing is not required for exceeding the SSIPE thresholds.

2. Public Notice Action

As discussed above, public noticing is required for this project for NOx emissions that exceed the 100 lb/day threshold. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation 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 Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, 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. DELs are also required to enforce the applicability of BACT. For this emergency standby IC engine, the DELs are stated in the form of emission factors, the maximum engine horsepower rating, and the maximum operational time of 24 hours per day. Therefore, the following conditions will be listed on the ATC to ensure compliance:

- {edited 3501} Emissions from this IC engine shall not exceed any of the following limits: 4.06 g-NOx/bhp-hr, 0.60 g-CO/bhp-hr, 0.005 g-SOx/bhp-hr or 0.27 g-VOC/bhp-hr. [District Rule 2201]

- Emissions from this IC engine shall not exceed 0.06 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 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
   Monitoring is not required to demonstrate compliance with Rule 2201.

3. Recordkeeping
   Recordkeeping is required to demonstrate compliance with the offset, public notification, and daily emission limit requirements of Rule 2201. As required by District Rule 4702, Stationary Internal Combustion Engines - Phase 2, this IC engine is subject to recordkeeping requirements. Recordkeeping requirements,
in accordance with District Rule 4702, will be discussed in Section VIII, District Rule 4702, of this evaluation.

4. Reporting
   Reporting is not 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. See Appendix D 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 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 III – Standards of Performance for Stationary Spark Ignited Internal Combustion Engines

Pursuant to §60.4200 of Subpart III, this engine is subject to this federal regulation. However, the District has not been delegated authorization to enforce the requirements of this regulation. The applicant will be so notified in a permit condition.

Rule 4002 National Emission Standards for Hazardous Air Pollutants


Pursuant to §63.6585 of Subpart ZZZZ, this engine is subject to this federal regulation. However, the District has not been delegated authorization to enforce the requirements of 40 CFR 63 Subpart ZZZZ for non-Part 70 sources (Major Sources). The applicant will be so notified in a permit condition.
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 (dated 3/2/01) 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.

District Policy APR 1905 - Risk Management Policy for Permitting New and Modified Sources (dated 3/2/01) 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. Therefore, a risk management review (RMR) was performed for this project. The RMR results are summarized in the following table and can be seen in Appendix E.
The acute and chronic indices are below 1.0; and the maximum individual cancer risk associated with the project is 3.01E-08, which is less than the 1 in a million threshold. 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 following permit conditions will be included on the ATC permit.

**Unit 1-0**

1. The PM10 emissions rate shall not exceed 0.06 g/bhp-hr based on US EPA certification using ISO 8178 test procedure. [District Rules 2201]
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. [District Rule 4102]
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 50 hours per calendar year. [District Rule 4702 and 17 CCR 93115]

**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 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:

\[
0.1 \frac{\text{grain}}{\text{dscf}} \times \frac{\text{g}}{15.43 \text{g}} \times \frac{\text{1 Btu in}}{0.35 \text{ Btu out}} \times \frac{9,051 \text{ dscf}}{10^6 \text{ Btu}} \times \frac{2,542.5 \text{ Btu}}{1 \text{ bhp - hr}} \times \frac{0.96 \text{ g-PM}_{10}}{1 \text{ g-PM}_{10}} = 0.4 \frac{\text{g-PM}_{10}}{\text{bhp - hr}}.
\]

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

District Rule 4701 is applicable to diesel-fired emergency standby or emergency IC engines. Rule 4702 is at least as stringent as this rule in all aspects; therefore, compliance with that rule will ensure compliance with Rule 4701.

Rule 4702 Internal Combustion Engines – Phase 2

The following table demonstrates how the proposed engine will comply with the requirements of District Rule 4702.

<table>
<thead>
<tr>
<th>District Rule 4702 Requirements Emergency Standby IC Engines</th>
<th>Proposed Method of Compliance with District Rule 4702 Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation of emergency standby engines is limited to 100 hours or less per calendar year for non-emergency purposes, verified through the use of a non-resettable elapsed operating time meter.</td>
<td>The Air Toxic Control Measure for Stationary Compression Ignition Engines (Stationary ATCM) limits this engine maintenance and testing to 50 hours/year. Thus, compliance is expected. The following conditions will be included on the permit:</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>{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 Rules 4701 and 4702]</td>
<td></td>
</tr>
<tr>
<td>{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 Rules 4701 and 4702]</td>
<td></td>
</tr>
</tbody>
</table>
The owner/operator must monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.

<table>
<thead>
<tr>
<th>Rule 4801 Sulfur Compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule 4801 requires that sulfur compound emissions (as SO\textsubscript{2}) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:</td>
</tr>
<tr>
<td>Volume SO\textsubscript{2} = (n \times R \times T) + P</td>
</tr>
</tbody>
</table>
Merced Irrigation District
N-9037-1-0 – Project N-1142622

\[ n = \text{moles SO}_2 \]

\[ T \text{ (standard temperature)} = 60 \, ^\circ\text{F or 520 \, ^\circ\text{R}} \]

\[ R \text{ (universal gas constant)} = \frac{10.73 \, \text{psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot \text{^\circ\text{R}}} \]

\[
\begin{align*}
0.000015 \, \text{lb} - \text{fuel} & \times 7.41 \, \text{lb} - \text{S} & 64 \, \text{lb} - \text{SO}_2 & \times 1 \, \text{MMBtu} & \times 1 \, \text{gal} & \times \frac{10.73 \, \text{psi} \cdot \text{ft}^3}{\text{lb} - \text{mol} \cdot \text{^\circ\text{R}}} & \times \frac{32 \, \text{lb} - \text{S}}{1 \, \text{gal}} & \times \frac{9.051 \, \text{scf}}{1 \, \text{MMBtu}} & \times \frac{64 \, \text{lb} - \text{SO}_2}{1 \, \text{lb} - \text{mol}} & \times 1,000,000 = 1.0 \, \text{ppmv}
\end{align*}
\]

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:

- 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 site is located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice will be performed.

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

The following table demonstrates how the proposed engine will comply with the requirements of Title 17 CCR Section 93115.

<table>
<thead>
<tr>
<th>Title 17 CCR Section 93115 Requirements for New Emergency IC Engines Powering Electrical Generators</th>
<th>Proposed Method of Compliance with Title 17 CCR Section 93115 Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency engines must be fired on CARB diesel fuel, or an approved alternative diesel fuel.</td>
<td>The applicant has proposed the use of CARB certified diesel fuel. The proposed permit condition, requiring the use of CARB certified diesel fuel, was included earlier in this evaluation.</td>
</tr>
<tr>
<td>Engines must emit diesel PM at a rate less than or equal to 0.15 g/bhp-hr or must meet the diesel PM standard, as specified in the off-road compression ignition standards for off-road engines with the same maximum rated power (17 CCR 93115)</td>
<td>The applicant has proposed the use of an engine that is certified to the applicable EPA Tier Certification level for the applicable horsepower range, guaranteeing compliance with the emission standards of Subpart III. Additionally, the proposed diesel PM emissions rate is less than or equal to 0.15 g/bhp-hr.</td>
</tr>
</tbody>
</table>
| The engine may not be operated more than 50 hours per year for maintenance and testing purposes. | The following condition will be included on the permit:  
- 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... |
Engines, with a PM10 emissions rate greater than 0.01 g/bhp-hr and located at schools, may not be operated for maintenance and testing whenever there is a school sponsored activity on the grounds. Additionally, engines located within 500 feet of school grounds may not be operated for maintenance and testing between 7:30 AM and 3:30 PM.

The District has verified that this engine is not located within 500' of a school.

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.

Permit conditions enforcing these requirements were shown earlier in the evaluation.

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.
IX. Recommendations:

Compliance with all applicable rules and regulations is expected. Once the 30-day NSR Public Notice period is completed, issue the Authority to Construct permit N-9037-1-0 subject to the permit conditions on the attached Authority to Construct in Appendix A.

X. Billing Information:

<table>
<thead>
<tr>
<th>Permit Number</th>
<th>Fee Schedule</th>
<th>Fee Description</th>
<th>Fee Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-9037-1-0</td>
<td>3020-10-E</td>
<td>900 bhp IC engine</td>
<td>$602</td>
</tr>
</tbody>
</table>

Appendices:

A. Authority to Construct permit N-9037-1-0
B. Emissions Data
C. QNEC Calculations
D. BACT Guideline and BACT Analysis
E. RMR Summary
Appendix A

Authority to Construct permit N-9037-1-0
AUTHORITY TO CONSTRUCT

PERMIT NO: N-9037-1-0
LEGAL OWNER OR OPERATOR: MERCED IRRIGATION DISTRICT
MAILING ADDRESS: PO BOX 2288
MERced, CA 95344
LOCATION: 1901 HAYDEN RD
LEGRAND, CA 95333
EQUIPMENT DESCRIPTION:
900 BHP CATERPILLAR MODEL C18 DIESEL-FIRED EMERGENCY ENGINE (TIER 2 CERTIFIED) POWERING AN ELECTRICAL GENERATOR.

CONDITIONS

1. (98) No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. (14) Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
3. (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]
4. (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]
5. 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]
6. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rules 4701 and 4702 and 17 CCR 93115]
7. Emissions from this IC engine shall not exceed any of the following limits: 4.06 g-NOx/bhp-hr, 0.60 g-CO/bhp-hr, or 0.27 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
8. Emissions from this IC engine shall not exceed 0.06 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 17 CCR 93115]
9. 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]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 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.

Seyed Sadedin, Executive Director (APCO)

Arnaud Marjollet, Director of Permit Services
Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718 • (209) 557-6400 • Fax (209) 557-5475
10. 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]

11. 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 50 hours per calendar year. [District Rules 4701 and 4702 and 17 CCR 93115]

12. 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 Rules 4701 and 4702]

13. 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 Rules 4701 and 4702]

14. 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 Rules 4701 and 4702 and 17 CCR 93115]

15. The permittee shall maintain monthly records of the type of fuel purchased. [District Rules 4701 and 4702 and 17 CCR 93115]

16. All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 4701 and 4702 and 17 CCR 93115]

17. U.S. EPA administers the requirements of 40 CFR Part 60 Subpart III and 40 CFR Part 63 Subpart ZZZZ. The owner or operator shall comply with the emission and operating limitations, testing requirements, initial and continuous compliance requirements as specified in these subparts. The owner or operator shall submit all applicable notifications, reports, and records to the administrator by the required compliance dates. [District Rules 4001 and 4002]
Appendix B

Engine emissions data
Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Part 60, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 60.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.
Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003,

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as the ones for which certification is granted.

<table>
<thead>
<tr>
<th>MODEL YEAR</th>
<th>ENGINE FAMILY</th>
<th>DISPLACEMENT (litres)</th>
<th>FUEL TYPE</th>
<th>USEFUL LIFE (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>ACPXL18.1E8W</td>
<td>18.1</td>
<td>Diesel</td>
<td>8000</td>
</tr>
</tbody>
</table>

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS
Direct Diesel Injection, Turbocharger, Charge Air Cooler, Engine Control Module

Typical Equipment Application
Generator

The engine models and codes are attached. The 2014 EPA Engine Family # is ACPXL18.1NY-016. See attached copy of the US EPA 2014 model year Certification of Compliance.

The following are the exhaust certification standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity of smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, 13 CCR Sections 2423):

<table>
<thead>
<tr>
<th>RATED POWER CLASS</th>
<th>EMISSION STANDARD CATEGORY</th>
<th>EXHAUST (g/kw-hr)</th>
<th>OPAQITY (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KW &gt; 560</td>
<td>Tier 2 STD</td>
<td>HC: N/A NOx: N/A</td>
<td>6.4 3.5 0.20</td>
</tr>
<tr>
<td></td>
<td>FEL</td>
<td>HC: N/A NOx: N/A</td>
<td>6.2 N/A 0.08</td>
</tr>
<tr>
<td></td>
<td>CERT</td>
<td>HC: N/A NOx: N/A</td>
<td>5.8 0.6 0.08</td>
</tr>
</tbody>
</table>

BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any engine within this engine family under 13 CCR Sections 2423 and 2427.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the Information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

This Executive Order hereby cancels and replaces Executive Order U-R-001-0380 dated October 23, 2009.

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 30th day of August 2010.

Annette Hebert, Chief
Mobile Source Operations Division
<table>
<thead>
<tr>
<th>Engine Family</th>
<th>Engine Code</th>
<th>2. Engine Model</th>
<th>3. BHP @ RPM (SAE Gross)</th>
<th>4. Fuel Rate: mm/l/brake @ peak HP (for diesels only)</th>
<th>5. Fuel Rate: mm/l/peak HP (for diesels only)</th>
<th>6. Torque @ RPM (SEA Gross)</th>
<th>7. Fuel Rate: mm/l/brake @ peak torque (for diesels only)</th>
<th>8. Fuel Rate: mm/l/peak torque (for diesels only)</th>
<th>9. Emission Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>L18.1ESW</td>
<td>Cert Test 2</td>
<td>C18</td>
<td>923@1800</td>
<td>532</td>
<td>322.3</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>1 Cert Engine</td>
<td>C18</td>
<td>923@1800</td>
<td>517</td>
<td>313.1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>2</td>
<td>C18</td>
<td>923@1800</td>
<td>510</td>
<td>309</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>3</td>
<td>C18</td>
<td>923@1800</td>
<td>510</td>
<td>309</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>4</td>
<td>C18</td>
<td>861@1800</td>
<td>479</td>
<td>289.7</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>5</td>
<td>C18</td>
<td>861@1800</td>
<td>479</td>
<td>289.7</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>6</td>
<td>C18</td>
<td>823@1800</td>
<td>510</td>
<td>309</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>7</td>
<td>C18</td>
<td>861@1800</td>
<td>479</td>
<td>289.7</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>8</td>
<td>C18</td>
<td>923@1800</td>
<td>510</td>
<td>309</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>9</td>
<td>C18</td>
<td>861@1800</td>
<td>479</td>
<td>289.7</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
<tr>
<td>L18.1ESW</td>
<td>10</td>
<td>C18</td>
<td>923@1800</td>
<td>510</td>
<td>309</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>EM, DI, TC, SAE E2M</td>
</tr>
</tbody>
</table>

Fuel Rate:
- mm/l/brake @ peak HP
- mm/l/peak HP
- mm/l/brake @ peak torque
- mm/l/peak torque

Engine Model Codes:
- C18

Specifications and Details:
- BHP (Brake Horsepower)
- RPM (Revolutions Per Minute)
- Torque
- Emission Control Standards

Date: 8/18/2010
Appendix C

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:

\[ \text{QNEC} = \text{PE}_2 - \text{PE}_1, \]

where:

- \( \text{QNEC} \) = Quarterly Net Emissions Change for each emissions unit, lb/qtr
- \( \text{PE}_2 \) = Post-Project Potential to Emit for each emissions unit, lb/qtr
- \( \text{PE}_1 \) = Pre-Project Potential to Emit for each emissions unit, lb/qtr

Using the emission calculations in this evaluation, \( \text{PE}_{2\text{quarterly}} \) and \( \text{BE}_{\text{quarterly}} \) can be calculated as follows:

This calculation is required for application emission profile purposes. It is assumed that each unit's annual emissions are evenly distributed throughout the year as follows:

\[ \Delta \text{PE (lb/qtr)} = \frac{\text{PE (lb/yr)}}{4 \text{ qtr/yr}} \]

N-9037-1-0:

\[
\begin{align*}
\Delta \text{PE}_{\text{NOx}} &= 403 \text{ lb-NOx/year} - 0 \text{ lb-NOx/year} = 403 \text{ lb/year} \\
\Delta \text{PE}_{\text{CO}} &= 60 \text{ lb-CO/year} - 0 \text{ lb-CO/year} = 60 \text{ lb/year} \\
\Delta \text{PE}_{\text{VOC}} &= 27 \text{ lb-VOC/year} - 0 \text{ lb-VOC/year} = 27 \text{ lb/year} \\
\Delta \text{PE}_{\text{PM10}} &= 6 \text{ lb-PM10/year} - 0 \text{ lb-PM10/year} = 6 \text{ lb/year} \\
\Delta \text{PE}_{\text{SOx}} &= 1 \text{ lb-SOx/year} - 0 \text{ lb-SOx/year} = 1 \text{ lb/year}
\end{align*}
\]

<table>
<thead>
<tr>
<th></th>
<th>Quarter 1</th>
<th>Quarter 2</th>
<th>Quarter 3</th>
<th>Quarter 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>.100</td>
<td>.101</td>
<td>.101</td>
<td>.101</td>
</tr>
<tr>
<td>CO</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>VOC</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>PM10</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SOx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 3.1.1
Last Update: 9/10/2013
Emergency Diesel IC Engine

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Achieved in Practice or in the SIP</th>
<th>Technologically Feasible</th>
<th>Alternate Basic Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>Latest EPA Tier Certification level for applicable horsepower range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOX</td>
<td>Latest EPA Tier Certification level for applicable horsepower range</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.15 g/hp-hr or the Latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent. (ATCM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM10</td>
<td>Very low sulfur diesel fuel (15 ppmw sulfur or less)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOX</td>
<td>Latest EPA Tier Certification level for applicable horsepower range</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: for emergency engines 50 ≤ bhp < 75, Tier 4 Interim certification is the requirement; for emergency engines 75 ≤ bhp <750 bhp, Tier 3 certification is the requirement; for emergency engines ≥ 750 bhp, Tier 2 certification is the requirement.

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 NOx and VOC emissions:

BACT Guideline 3.1.1 (July 10, 2009) applies to emergency diesel IC engines. In accordance with the District BACT policy, information from that guideline will be utilized without further analysis.

1. BACT analysis for NO\textsubscript{x} and 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

   To determine the latest applicable Tier level, the following EPA and state regulations were consulted:
   
   - 40 CFR Part 60 Subpart III – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
   - 40 CFR Part 89 – Control of Emissions from New and In-Use Nonroad Compression – Ignition Engines
   - 40 CFR Part 1039 – Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines
   - Title 17 CCR, Section 93115 - Airborne Toxic Control Measure (ATCM) for Stationary Compression-Ignition (CI) Engines

   40 CFR Parts 89 and 1039, which apply only to nonroad engines, do not directly apply because the proposed emergency engine does not meet the definition of a nonroad engine. Therefore, only Title 17 CCR, Section 93115 and 40 CFR Part 60 Subpart III apply directly to the proposed emergency engine.

   Title 17 CCR, Section 93115.6(a)(3)(A) (CARB stationary diesel engine ATCM) applies to emergency standby diesel-fired engines and requires that such engines be certified to the emission levels in Table 1 (below). Please note that these levels are at least as stringent or more stringent than the emission levels in 40 CFR Subpart III.
Additionally, 40 CFR Subpart III establishes emission standards for emergency diesel IC engines. These emission standards are the same as those specified in the CARB ATCM, except for engines rated greater than or equal to 50 and less than 75 hp. For such IC engines, the CARB ATCM is more stringent.

Therefore, the most stringent applicable emission standards are those listed in the CARB ATCM (Table 1). For IC engines rated greater than 750 hp the highest Tier required is Tier 2.

Also, please note that neither the state ATCM nor the Code of Federal Regulations require the installation of IC engines meeting a higher Tier standard than those listed above for emergency applications, due to concerns regarding the effectiveness of the exhaust emissions controls during periods of short-term operation (such as testing operational readiness of an emergency engine).

The proposed engine is rated at 900 bhp. Therefore, the applicable control technology option is EPA Tier 2 certification.

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**

   The applicant has proposed the only control option remaining under consideration. Therefore, a cost effectiveness analysis is not required.

e. **Step 5 - Select BACT**

   BACT for NOx and VOC will be the use of an EPA Tier 2 certified engine. The applicant is proposing such a unit. Therefore, the District's BACT requirements will be satisfied.
2. BACT Analysis for PM\textsubscript{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)

The latest EPA Tier Certification level for an engine of the proposed model year and horsepower rating is Tier 2. Refer to the Top-Down BACT analysis for NO\textsubscript{x} for a discussion regarding the determination of the EPA Tier level to be considered.

Please note Tier 2 or 3 IC engines do not have a PM emission standard that is more stringent than 0.15 g/hp-hr. Additionally, the ATCM requires a PM emission standard of 0.15 g/hp-hr for all new emergency diesel IC engines.

Therefore, a PM\textsubscript{10} emission standard of 0.15 g/hp-hr is required as BACT.

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

The applicant has proposed the only control option remaining under consideration. Therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

BACT for PM\textsubscript{10} 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.
Appendix E

RMR Summary
San Joaquin Valley Air Pollution Control District
Risk Management Review

To: Fred Cruz - Permit Services
From: Cheryl Lawler - Permit Services
Date: July 14, 2014
Facility Name: Merced Irrigation District
Location: 1901 Hayden Road, LeGrand
Application #(s): N-9037-1-0
Project #: N-1142622

A. RMR SUMMARY

<table>
<thead>
<tr>
<th>Categories</th>
<th>Emergency Diesel ICE (Unit 1-0)</th>
<th>Project Totals</th>
<th>Facility Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prioritization Score</td>
<td>N/A</td>
<td>N/A</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Acute Hazard Index</td>
<td>N/A</td>
<td>N/A</td>
<td>0.00</td>
</tr>
<tr>
<td>Chronic Hazard Index</td>
<td>N/A</td>
<td>N/A</td>
<td>0.00</td>
</tr>
<tr>
<td>Maximum Individual Cancer Risk</td>
<td>3.01E-08</td>
<td>3.01E-08</td>
<td>3.01E-08</td>
</tr>
<tr>
<td>T-BACT Required?</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Permit Conditions?</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Prioritization for this unit was not conducted since it has been determined that all diesel-fired IC engines will result in a prioritization score greater than 1.0.

2 Acute and Chronic Hazard Indices were not calculated since there is no risk factor, or the risk factor is so low that the risk has been determined to be insignificant for this type of unit.

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

Unit 1-0

1. The PM10 emissions rate shall not exceed 0.08 g/bhp-hr based on US EPA certification using ISO 8178 test procedure. [District Rules 2201]
2. (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] N
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 50 hours per calendar year. [District Rule 4702 and 17 CCR 93115]
B. RMR REPORT

I. Project Description

Technical Services received a request on July 3, 2014, to perform an Ambient Air Quality Analysis (AAQA) and a Risk Management Review (RMR) for a 900 bhp emergency diesel IC engine powering an electrical generator.

II. Analysis

Diesel exhaust emissions and the Cancer Risk from the engine were calculated using the District approved DICE spreadsheet.

The following parameters were used for the review:

<table>
<thead>
<tr>
<th>Analysis Parameters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PM_{10} g/hp-hr</td>
<td>0.08</td>
</tr>
<tr>
<td>BHP</td>
<td>900</td>
</tr>
<tr>
<td>Closest Receptor (m)</td>
<td>457</td>
</tr>
<tr>
<td>Max Hours per Year</td>
<td>50</td>
</tr>
<tr>
<td>Location Type</td>
<td>Rural</td>
</tr>
<tr>
<td>Source Type</td>
<td>Point</td>
</tr>
<tr>
<td>Stack Diameter (m)</td>
<td>0.2</td>
</tr>
<tr>
<td>Stack Height (m)</td>
<td>4.57</td>
</tr>
<tr>
<td>Stack Gas Temp. (K)</td>
<td>807</td>
</tr>
<tr>
<td>Stack Gas Velocity (m/s)</td>
<td>69.65</td>
</tr>
</tbody>
</table>

Technical Services also performed modeling for criteria pollutants NOx, SOx, and PM_{10}; as well as the RMR. The emission rates used for criteria pollutant modeling were 403 lb/yr NOx, 1 lb/yr SOx, and 8 lb/yr PM_{10}.

The results from the Criteria Pollutant Modeling are as follows:

<table>
<thead>
<tr>
<th>Diesel ICE</th>
<th>1 Hour</th>
<th>3 Hours</th>
<th>8 Hours</th>
<th>24 Hours</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>NA</td>
<td>X</td>
<td>NA</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>NO_{x}</td>
<td>NA</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Pass</td>
</tr>
<tr>
<td>SO_{x}</td>
<td>NA</td>
<td>NA</td>
<td>X</td>
<td>NA</td>
<td>Pass</td>
</tr>
<tr>
<td>PM_{10}</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>NA</td>
<td>Pass*</td>
</tr>
</tbody>
</table>

*Results were taken from the attached PSD spreadsheet.

1. 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.

2. The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).
III. Conclusions

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

The Cancer Risk associated with the operation of the proposed diesel IC engine 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 conditions listed on Page 1 of this report must be included for the 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.

Attachments

RMR Request Form & Related Documents
Project Emails
DICE Spreadsheet
AAQA Results
Facility Summary
AERMOD Non-Regulatory Option Checklist