



APR 11 2017

Raymond Quaresma  
Raymond and Sue Quaresma Dairy  
5300E Perrin Rd  
Manteca, CA 95337

**Re: Notice of Preliminary Decision - Authority to Construct**  
**Facility Number: N-5654**  
**Project Number: N-1170107**

Dear Mr. Quaresma:

Enclosed for your review and comment is the District's analysis of Raymond and Sue Quaresma Dairy's application for an Authority to Construct for the installation of a diesel-fired emergency engine powering an electrical generator located at 26290 South Union Road, Manteca.

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/ys

Enclosures

cc: Tung Le, CARB (w/ enclosure) via email

**Seyed Sadredin**

Executive Director/Air Pollution Control Officer

**Northern Region**

4800 Enterprise Way  
Modesto, CA 95356-8718  
Tel: (209) 557-6400 FAX: (209) 557-6475

**Central Region (Main Office)**

1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
Tel: (559) 230-6000 FAX: (559) 230-6061

**Southern Region**

34946 Flyover Court  
Bakersfield, CA 93308-9725  
Tel: 661-392-5500 FAX: 661-392-5585

**San Joaquin Valley Air Pollution Control District**  
Authority to Construct Application Review  
Diesel-fired Emergency Standby IC Engine

Facility Name:	Raymond & Sue Quaresma Dairy	Date:	April 4, 2017
Mailing Address:	5300 E Perrin Road Manteca, CA 95337	Engineer:	Fred Cruz
Contact Person:	Raymond Quaresma	Lead Engineer:	Nick Peirce
Telephone:	(209) 679-3386	Vince Furtado (consultant)	(209) 324-4097
Email:		<a href="mailto:vfurtado@fragservices.com">vfurtado@fragservices.com</a>	
Application No:	N-5654-6-0		
Project No:	N-1170107		
Complete:	February 9, 2017		

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**I. Proposal:**

The Raymond and Sue Quaresma Dairy submitted an Authority to Construct application to install a 685 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 (2/18/2016)  
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 4002 National Emission Standards for Hazardous Air Pollutants (5/20/2004)  
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 (11/14/2013)  
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  
California Environmental Quality Act (CEQA)  
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 26290 South Union Road, Manteca, CA. The District has verified that the equipment is not located within 1,000 feet of the outer boundary of a K-12 school. See area map.

### 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-5654-6-0: 685 BHP DETROIT DIESEL MODEL SERIES 60 DIESEL-FIRED EMERGENCY ENGINE (TIER 3 CERTIFIED) POWERING AN ELECTRICAL GENERATOR.

### VI. Emission Control Technology Evaluation:

The applicant has proposed to install a 2008 Model Year Tier 3 certified diesel-fired IC engine that is fired on very low-sulfur diesel fuel (0.0015% by weight sulfur maximum).

NO<sub>x</sub>, CO, VOC and PM<sub>10</sub>:

Per District Guidance Document FYI-324 and the District BACT Guideline 3.1.1, the applicant is required to install the latest available tier certification standard for emergency engines as noted below. A new emergency engine shall meet the requirements as follows:

50 ≤ bhp < 75: Tier 4 Interim certification standards  
75 ≤ bhp < 750: Tier 3 certification standards  
≥ 750 bhp: Tier 2 certification standards

The applicant has proposed to install a 685 bhp Tier 3 certified emergency engine which meets the requirements of District Policy FYI-324 (see Appendix B for a copy of the emissions data sheet for this engine and District Policy FYI-324).

SO<sub>x</sub>:

The use of very low-sulfur diesel fuel (0.0015% by weight sulfur maximum) reduces SO<sub>x</sub> 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)
PM <sub>10</sub> 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: 29.2 gal/hr @ 100% load (engine data sheet)

**B. Emission Factors**

The applicant supplied the emissions factor for NO<sub>x</sub> and VOC emissions as a combined emission factor. The engine has certified NO<sub>x</sub> + VOC emissions of 2.91 g/bhp-hr (3.9 g/kW-hr). It will be assumed the NO<sub>x</sub> + VOC emission factor is split 95% NO<sub>x</sub> and 5% VOC (per the Carl Moyer program).

This 685 bhp engine is a Tier 3 certified IC engine and the applicant supplied the combined NO<sub>x</sub> + VOC emissions factor as 2.91 g/bhp-hr (3.90 g/kw-hr). Therefore, the NO<sub>x</sub> and VOC emissions factors are calculated as follows:

NO<sub>x</sub> g/bhp-hr = 2.91 g/bhp-hr x 0.95  
**NO<sub>x</sub> = 2.77 g/bhp-hr**

VOC (g/bhp-hr) = 2.91 g/bhp-hr x 0.05  
**VOC = 0.14 g/bhp-hr**

Pollutant	Emission Factor (g/bhp-hr)	Source
NO <sub>x</sub>	2.77	Engine manufacturer
CO	0.90	Engine manufacturer
VOC	0.14	Engine manufacturer
PM <sub>10</sub>	0.13	Engine manufacturer
SO <sub>x</sub>	0.005	Calculated below

The emission factor for SO<sub>x</sub> may be calculated based on the current CARB standard for diesel sulfur content, which is 15 ppm by weight.

$$\frac{0.000015 \text{ lb-S}}{\text{lb-fuel}} \times \frac{7.1 \text{ lb-fuel}}{\text{gallon}} \times \frac{2 \text{ lb-SO}_2}{1 \text{ lb-S}} \times \frac{1 \text{ gal}}{137,000 \text{ Btu}} \times \frac{1 \text{ bhp input}}{0.35 \text{ bhp out}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp-hr}} \times \frac{453.6 \text{ g}}{\text{lb}} = 0.005 \frac{\text{g-SO}_x}{\text{bhp-hr}}$$

**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 NO<sub>x</sub> emissions is representative of emission calculations for all

pollutants. Annual emissions are based on 50 hours per year for non-emergency operation.

NO<sub>x</sub>: 2.77 g/hp-hr × 685 hp × lb/453.6 g  
 NO<sub>x</sub>: 4.18 lb/hr, 100.4 lb/day, 209 lb/yr  
 CO: 1.36 lb/hr, 32.6 lb/day, 68 lb/yr  
 VOC: 0.23 lb/hr, 5.4 lb/day, 11 lb/yr  
 PM<sub>10</sub>: 0.20 lb/hr, 4.7 lb/day, 10 lb/yr  
 SO<sub>x</sub>: 0.01 lb/hr, 0.2 lb/day, 0.4 lb/yr <sup>1</sup>

	NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>x</sub>
Daily PE	100.4	32.6	5.4	4.7	0.2
Annual PE	209	68	11	10	0

### 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. This is an existing facility and SSPE1 is based on emission calculations from project N-1122426, unless otherwise noted.

SSPE1							
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC	NH <sub>3</sub>	H <sub>2</sub> S
N-5654-1-3	0	0	0	0	911	437	0
N-5654-2-5	0	0	26,534	0	25,182	122,060	0
N-5654-3-3	0	0	0	0	6,133	39,180	3,918
N-5654-4-3	0	0	0	0	1,633	7,834	0
N-5654-5-2	0	0	0	0	45,091	0	0
Total:	0	0	26,534	0	78,950	169,511	3,918

### 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.

<sup>1</sup> Per District Policy APR 1105, Use of Significant Figures, annual emissions less than 0.5 lb are set to zero.

SSPE2							
	NOx	SOx	PM <sub>10</sub>	CO	VOC	NH <sub>3</sub>	H <sub>2</sub> S
N-5654-1-3	0	0	0	0	911	437	0
N-5654-2-5	0	0	26,534	0	25,182	122,060	0
N-5654-3-3	0	0	0	0	6,133	39,180	3,918
N-5654-4-3	0	0	0	0	1,633	7,834	0
N-5654-5-1	0	0	0	0	45,091	0	0
<b>N-5654-6-0 (ATC)</b>	<b>209</b>	<b>0</b>	<b>10</b>	<b>68</b>	<b>11</b>	<b>0</b>	<b>0</b>
Total:	209	0	26,544	68	78,961	169,511	3,918

## 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 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

In determining whether a facility is a major source, fugitive emissions are not counted unless the facility belongs to certain specified source categories. 40 CFR 71.2 (Definitions, Major Source (2)) states the following:

*(2) A major stationary source of air pollutants or any group of stationary sources as defined in section 302 of the Act, that directly emits, or has the potential to emit, 100 tpy or more of any air pollutant (including any major source of fugitive emissions of any such pollutant, as determined by rule by the Administrator). The fugitive emissions of a stationary source shall not be considered in determining whether it is a major stationary source for the purposes of section 302(j) of the Act, unless the source belongs to one of the following categories of stationary source: (i) Coal cleaning plants (with thermal dryers); (ii) Kraft pulp mills; (iii) Portland cement plants; (iv) Primary zinc smelters; (v) Iron and steel mills; (vi) Primary aluminum ore reduction plants; (vii) Primary copper smelters; (viii) Municipal incinerators capable of charging more than 250 tons of refuse per day; (ix) Hydrofluoric, sulfuric, or nitric acid plants; (x) Petroleum refineries; (xi) Lime plants; (xii) Phosphate rock processing plants; (xiii) Coke oven batteries; (xiv) Sulfur recovery plants; (xv) Carbon black plants (furnace process); (xvi) Primary lead smelters; (xvii) Fuel conversion plants; (xviii) Sintering plants; (xix) Secondary metal production plants; (xx) Chemical process plants; (xxi) Fossil-fuel boilers (or combination thereof) totaling more than 250 million British thermal units per hour heat input; (xxii) Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels; (xxiii) Taconite ore processing plants; (xxiv) Glass fiber processing plants; (xxv)*

*Charcoal production plants; (xxvi) Fossil-fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input; or (xxvii) Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act.*

Because agricultural operations do not fall under any of the specific source categories listed above, fugitive emissions are not counted when determining if an agricultural operation is a major source. 40 CFR 71.2 defines fugitive emissions as “those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally-equivalent opening.”

Since emissions at the dairy 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.

Potential to Emit for the dairy (based on discussion on “fugitive emissions” from the dairy operation only the VOC emissions from the liquid manure operation are considered as non-fugitive emissions):

<b>Non-Fugitive SSPE2 (lb/year)</b>					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
N-5654-3-3 Liquid manure	0	0	0	0	6,133
<b>Non Fugitive SSPE</b>	0	0	0	0	6,133

<b>Rule 2201 Major Source Determination (lb/year)</b>					
	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	CO	VOC
SSPE2 Major Source	0	0	0	0	6,133
Major Source Threshold	20,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No

As seen in the table above, the facility is not an existing Major Source and also 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.

PSD Major Source Determination (tons/year)							
	NO <sub>2</sub>	VOC	SO <sub>2</sub>	CO	PM	PM <sub>10</sub>	CO <sub>2e</sub> (metric ton/yr)*
Estimated Facility PE	0	3.074	0	0	0	0	24,315
PSD Major Source Thresholds	250	250	250	250	250	250	100,000
PSD Major Source ? (Y/N)	N	N	N	N	N	N	N

\*GHG calculations attached in Appendix C are from project N-1122426, unless otherwise noted.

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

**6. Baseline Emissions (BE)**

BE will equal the 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 will equal the Historic Actual Emissions (HAE), calculated pursuant to Section 3.23. Since this is a new emissions unit, BE equals PE1 which will equal zero 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

District Rule 2201, Section 3.18 states that Federal Major Modifications are the same as "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

Since this facility is not a Major Source for any pollutants, this project does not constitute a Federal Major Modification. Additionally, since the facility is not a major source for PM<sub>10</sub> (140,000 lb/year), it is not a major source for PM<sub>2.5</sub> (200,000 lb/year).

## 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 D.

# 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.

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 unit -6-0 (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
NO <sub>x</sub>	100.4	> 2.0	N/A	Yes
SO <sub>x</sub>	0.2	> 2.0	N/A	No
PM <sub>10</sub>	4.7	> 2.0	N/A	Yes
CO	32.6	> 2.0 and SSPE2 ≥ 200,000 lb/yr	68	No
VOC	5.4	> 2.0	N/A	Yes

As shown above, BACT will be triggered for NO<sub>x</sub>, PM<sub>10</sub> and VOC emissions from this engine.

## 2. BACT Guideline

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

NO<sub>x</sub>, voc: Tier 3 engine  
 PM<sub>10</sub>: Use of an engine with PM<sub>10</sub> emission factor of 0.15 g/bhp-hr, or less

## B. Offsets

Since emergency IC engines are exempt from the offset requirements of Rule 2201, per Section 4.6.2, offsets are not required for this engine, and no offset calculations are 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 all pollutants are less than 100 lb/day.

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

As shown in Section VII.C.4, an offset threshold will not be surpassed.

- 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 source 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.

### 2. Public Notice Action

As demonstrated above, this project will require public noticing since the daily NOx emissions are greater than 100 lbs.

## 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:

- Emissions from this IC engine shall not exceed any of the following limits: 2.77 g-NO<sub>x</sub>/bhp-hr, 0.90 g-CO/bhp-hr, or 0.14 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
- Emissions from this IC engine shall not exceed 0.13 g-PM<sub>10</sub>/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 17 CCR 93115]
- 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**

Monitoring is not 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**

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. Refer to Appendix E of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO<sub>x</sub>, CO, and SO<sub>x</sub>. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO<sub>x</sub>, CO, or SO<sub>x</sub>.

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

#### **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**

Pursuant to § 60.4200 of Subpart IIII, 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**

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

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.

Technical Services received a request on February 8, 2017, to perform an Ambient Air Quality Analysis and Risk Management Review (RMR) for a 685 bhp emergency diesel IC engine powering an electric generator.

RMR Summary			
Categories	Diesel-Fired IC Engine (Unit 6-0)	Project Totals	Facility Totals
Prioritization Score	N/A <sup>1</sup>	>1.0	>1.0
Acute Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	N/A <sup>2</sup>
Chronic Hazard Index	0.00	0.00	0.27
Maximum Individual Cancer Risk	7.74E-08	7.74E-08	6.50E-06
T-BACT Required?	No		
Special Permit Conditions?	Yes		

- 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.

The acute and chronic indices are below 1.0 and the cancer risk factor associated with the 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).

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

Unit # 6-0:

1. The PM<sub>10</sub> emissions rate shall not exceed 0.13 g/hp-hr based on US EPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102; 13 CCR 2423 and 17 CCR 93115]
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. The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed 50 hours per year. [District Rules 2201, and 4702 and 17 CCR 93115]

**Rule 4201 Particulate Matter Concentration**

Rule 4201 limits particulate matter emissions from any single source operation to 0.1 gr/dscf, which, as calculated below, is equivalent to a PM<sub>10</sub> emission factor of 0.4 g-PM<sub>10</sub>/bhp-hr.

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

The new engine has a PM<sub>10</sub> 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.

District Rule 4702 Requirements Emergency Standby IC Engines	Proposed Method of Compliance with District Rule 4702 Requirements
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.	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.
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.	<p>The following conditions will be included on the permit:</p> <ul style="list-style-type: none"> <li>• {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]</li> <li>• {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]</li> </ul>
The owner/operator must monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.	<p>The following condition will be included on the permit:</p> <ul style="list-style-type: none"> <li>• {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</li> </ul>

	operational characteristics as recommended by the manufacturer or supplier). [District Rules 4701 and 4702]
<p>Records of the total hours of operation of the emergency standby engine, type of fuel used, purpose for operating the engine, all hours of non-emergency and emergency operation, and 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.</p>	<p>The following conditions will be included on the permit:</p> <ul style="list-style-type: none"> <li>• {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]</li> <li>• The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]</li> <li>• {3475} 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]</li> </ul>

**Rule 4801 Sulfur Compounds**

Rule 4801 requires that sulfur compound emissions (as SO<sub>2</sub>) shall not exceed 0.2% by volume. Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

$$\text{Volume SO}_2 = (n \times R \times T) \div P$$

n = moles SO<sub>2</sub>  
 T (standard temperature) = 60 °F or 520 °R  
 R (universal gas constant) =  $\frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot \text{°R}}$

$$\frac{0.000015 \text{ lb-S}}{\text{lb-fuel}} \times \frac{7.1 \text{ lb}}{\text{gal}} \times \frac{64 \text{ lb-SO}_2}{32 \text{ lb-S}} \times \frac{1 \text{ MMBtu}}{9,051 \text{ scf}} \times \frac{1 \text{ gal}}{0.137 \text{ MMBtu}} \times \frac{\text{lb-mol}}{64 \text{ lb-SO}_2} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb-mol} \cdot \text{°R}} \times \frac{520 \text{ °R}}{14.7 \text{ psi}} \times 1,000,000 = 1.0 \text{ ppmv}$$

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:



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

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
Emergency engines 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, was included earlier in this evaluation.
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)	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 IIII. Additionally, the proposed diesel PM emissions rate is less than or equal to 0.15 g/bhp-hr.
The engine may not be operated more than 50 hours per year for maintenance and testing purposes.	<p>The following condition will be included on the permit:</p> <ul style="list-style-type: none"> <li>• 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 &amp; 17 CCR 93115]</li> </ul>
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. See site map of proposed location of this emergency engine.
An owner or operator shall maintain monthly records of the following: emergency use hours of	Permit conditions enforcing these requirements were shown earlier in the evaluation.

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.	
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### 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.

Consistent with California Environmental Quality Act (CEQA) and CEQA Guidelines requirements, the San Joaquin Valley Air Pollution Control District (District) has adopted procedures and guidelines for implementing CEQA. The District's Environmental Review Guidelines (ERG) establishes procedures for avoiding unnecessary delay during the District's permitting process while ensuring that significant environmental impacts are thoroughly and consistently addressed. The ERG includes policies and procedures to be followed when processing permits for projects that are exempt under CEQA.

The State Legislature granted a number of exemptions from CEQA, including projects that require only ministerial approval. Based upon analysis of its own laws and consideration of CEQA provisions, the District has identified a limited number of District permitting activities considered to be ministerial approvals. As set forth in §4.2.1 of the ERG, projects permitted consistent with the District's Guidelines for Expedited Application Review (GEAR) are standard application reviews in which little or no discretion is used in issuing Authority to Construct (ATC) documents.

For the proposed project, the District performed an Engineering Evaluation (this document) and determined that the project will occur at an existing facility; involves negligible expansion of the existing use; and would not have a significant effect on the

environment. The District further determined that the project qualifies for processing under the procedures set forth in the District's Permit Services Procedures Manual in the Guidelines for Expedited Application Review (GEAR). Thus, as discussed above, issuance of such ATC(s) is ministerial approval for the District and is not subject to CEQA provisions.

### **Indemnification Agreement/Letter of Credit Determination**

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.

The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular type of facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

### **IX. Recommendations:**

Compliance with all applicable rules and regulations is expected. Issue Authority to Construct N-5654-6-0 subject to the permit conditions on the attached Authority to Construct in Appendix A.

### **X. Billing Information:**

<b>Billing Schedule</b>			
<b>Permit Number</b>	<b>Fee Schedule</b>	<b>Fee Description</b>	<b>Fee Amount</b>
N-5654-6-0	3020-10-D	685 bhp IC engine	\$525

### **Appendices**

- A. Authority to Construct permit N-5654-6-0
- B. Engine Emissions Data
- C. Green House Gas (GHG) Emission Calculations
- D. QNEC Calculations
- E. BACT Guideline and BACT Analysis
- F. RMR Summary

# Appendix A

Authority to Construct permit N-5654-6-0

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San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

**DRAFT**  
ISSUANCE DATE: DRAFT

PERMIT NO: N-5654-6-0

LEGAL OWNER OR OPERATOR: RAYMOND AND SUE QUARESMA DAIRY  
MAILING ADDRESS: 5300 E PERRIN RD  
MANTECA, CA 95337

LOCATION: 26290 S UNION RD  
MANTECA, CA 95337

EQUIPMENT DESCRIPTION:  
685 BHP DETROIT DIESEL MODEL SERIES 60 DIESEL-FIRED EMERGENCY ENGINE (TIER 3 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. {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]
3. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
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. This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702 and 17 CCR 93115]
6. {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]
7. Emissions from this IC engine shall not exceed any of the following limits: 2.77 g-NOx/bhp-hr, 0.90 g-CO/bhp-hr, or 0.14 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93115]
8. Emissions from this IC engine shall not exceed 0.13 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102 and 17 CCR 93115]
9. {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]

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 Sadredin, Executive Director / APCO

Arnaud Marjolle, Director of Permit Services

N-5654-6-0 Apr 4 2017 2:56PM - CRUZ - Joint Inspection NOT Required

10. {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]
11. {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]
12. {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]
13. {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]
14. 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 2201, 4102 and 4702, and 17 CCR 93115]
15. {4263} The permittee shall maintain monthly records of the type of fuel purchased. [District Rule 4702 and 17 CCR 93115]
16. {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]
17. U.S. EPA administers the requirements of 40 CFR Part 60 Subpart IIII 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]

DRAFT

# **Appendix B**

Engine emissions data

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 <b>AIR RESOURCES BOARD</b> <small>California Environmental Protection Agency</small>	<b>DETROIT DIESEL CORPORATION</b>	<b>EXECUTIVE ORDER U-R-007-0110</b> New Off-Road Compression-Ignition Engines
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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 those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2008	8DDXL14.0VLD	14.0	Diesel	8000
<b>SPECIAL FEATURES &amp; EMISSION CONTROL SYSTEMS</b>			<b>TYPICAL EQUIPMENT APPLICATION</b>	
Direct Diesel Injection, Engine Control Module, Turbocharger, Charge Air Cooler, Exhaust Gas Recirculation			Crane, Loader, Tractor, Pump, Compressor, Generator Set	

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbons (HC), oxides of nitrogen (NOx), or non-methane hydrocarbons 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) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
225 ≤ KW ≤560	Tier 3	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
		CERT	-	-	3.9	1.2	0.18	18	9	22

**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).

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 10 day of December 2007.



Annette Hebert, Chief  
 Mobile Source Operations Division





**SAN JOAQUIN VALLEY UNIFIED  
AIR POLLUTION CONTROL DISTRICT**



**FYI 324**

**DATE:** March 19, 2014  
**TO:** PSD Staff  
**FROM:** Dave Warner  
**SUBJECT:** Latest Available Tier Certification for Diesel Engines

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**I. PURPOSE:**

To provide guidance on the latest available tier requirements for the following diesel-fired internal combustion (IC) engine categories:

- Prime-use stationary agricultural operation (AO)
- Prime-use transportable AO
- Prime-use transportable non-AO
- Emergency

This guidance is not applicable to prime stationary non-AO, low-use, or limited-use IC engines. This guidance considers all federal, state and District regulations that apply to diesel engines in the SJ Valley.

**II. BACKGROUND:**

The standards contained in the federal or CA emission standards for non-road engines identify when manufacturers should be providing the next phase in low emission levels, which are called "Tiers". Tier 1, Tier 2, and Tier 3 units have been readily available per the dates identified in the standards (see attached standards), which are all in the past. The dates identified for Tier 4 Interim (Tier 4I) engines from 75 bhp and greater started in 2011 or 2012, depending on the horsepower. For new installations, including replacements, regulations such as CARB's ATCMs, District BACTs and Rule 4702 may require the engine to meet the certified compression-ignited engine standard in effect at the time of installation, which will be referred to as the "latest tier".

In certain cases, the applicant may not be able to obtain a latest tier engine. From CARB's Stationary ATCM exemption §93115.3(u), *"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.” A similar exemption is found in the Portable ATCM §93116.3.1.*

Utilizing CARBs availability exemptions shown above, the District can also allow the installation of previous tier engines to satisfy latest tier certification requirements.

### III. GUIDANCE:

#### A. Latest Available Tier Certification

##### a. Prime Engines

Per District BACT, Rule 4702, and/or the state ATCMs, the latest available tier is required to install a diesel-fired AO or transportable engine. Tier 1, Tier 2, and Tier 3 units were readily available per the dates identified in the standards (see attached standards).

##### Tier 4 Interim Engines:

Tier 4 Interim and Tier 4 Final engines availability were behind their set standard dates. A District survey concluded that Tier 4I certified engines were not readily available for >75 bhp engines until 3/14/13. That is, Tier 4I certification was the requirement for any Authority to Construct (ATC) or Permit-Exempt Equipment Registration (PEER) application for a new engine not deemed complete as of 3/14/13, with some exceptions (see below).

##### Tier 4 Final Engines:

As of the date of this FYI, Tier 4 Final engines are not considered readily available.

##### Exceptions to Tier 4 requirements:

A previous Tier engine, e.g. a Tier 3 or Tier 2 depending on the horsepower, may be allowed under the following circumstances on a project-specific basis:

- i. The applicant justifies in writing to the District's satisfaction that a Tier 4I engine is not available in the time frame required due to circumstances beyond control of the applicant, or
- ii. The engine was previously installed without an ATC, to be evaluated under BACT at the time of installation per FYI 98, Rule 4702, ATCM, and other applicable rules.

##### b. Emergency Engines

Per District BACT, the latest available tier certification standard for emergency engines is required to install a diesel-fired emergency engine. A new emergency engine shall meet the requirements as follows:

50 ≤ bhp < 75:	Tier 4 Interim certification standards
75 ≤ bhp < 750:	Tier 3 certification standards
≥ 750 bhp:	Tier 2 certification standards

Note, the above-listed certification standards correspond to the stationary ATCM's emission limit requirements for new emergency engines.

## B. Administrative Requirements

### Permitting

ATC permit applications shall be submitted to the District prior to installation of the unit, or 6 months prior to the 4702 compliance date, where applicable. Note that routine replacements, i.e. those with no more than 10% greater horsepower and having no higher emissions than the existing engine, may be installed without a final ATC permit, but shall submit an ATC application to the District within 7 days of completing the replacement (per Rule 2201 Section 8).

#### AO Engines:

An ATC is required for the installation of any engine greater than 50 bhp, continuous rating, if the engine is at an AO with emissions of at least 5 tons per year for NOx or VOC.

#### Non-AO Engines:

An ATC is required for the installation of any engine greater than 50 bhp, continuous rating.

### PEER

PEER applications shall be submitted to the District prior to the first operation of the unit, or 3 months prior to the 4702 compliance date, where applicable. All Tier 3 and Tier 4 engines at permit-exempt facilities must obtain a PEER with the District. However, per Rule 4702, emergency and low-use (less than 200 hr/yr) engines do not require PEERs.

A PEER is required for the installation of engines greater than 50 bhp, continuous rating, that is located at an AO with emissions less than 5 tons per year for NOx or VOC.

## Off-Road Compression-Ignition Emission Standards<sup>1</sup>

Power Rating (bhp)	Tier	Model Year	NO <sub>x</sub>	HC	NMHC +NO <sub>x</sub>	CO	PM		
50 ≤ hp < 75	1	1998 - 2003	6.9	-	-	-	-		
	2	2004 - 2007	-		5.6	3.7	0.3		
	4I	2008 - 2012			3.5		0.22		
	4F	2013+			0.022				
75 ≤ hp < 100	1	1998 - 2003		6.9	-		-	-	0.3
	2	2004 - 2007	-	5.6		3.7			
	3	2008 - 2011	-	3.5					
	4I	2012 - 2014	2.5	0.14			-	0.01	
	4F	2015+	0.29						
100 ≤ hp < 175	1	1997 - 2002	6.9	-	-		-	0.22	
	2	2003 - 2006	-		4.9	3.7			
	3	2007 - 2011	-		3.0				
	4I	2012 - 2014	2.5		0.14		-	0.01	
	4F	2015+	0.29						
175 ≤ hp < 300	1	1996 - 2002	6.9	1.0	-		8.5	0.4	
	2	2003 - 2005	-	-	4.9	2.6	0.15		
	3	2006 - 2010			3.0				
	4I	2011 - 2013			1.5			0.14	-
	4F	2014+			0.29				
300 ≤ hp < 600	1	1996 - 2000			6.9		1.0	-	8.5
	2	2001 - 2005	-	-	4.8	2.6	0.15		
	3	2006 - 2010			3.0				
	4I	2011 - 2013			1.5			0.14	-
	4F	2014+			0.29				

<sup>1</sup> Emission factors in g-pollutant/bhp-hr. Standards referenced from Title 13 CCR 2423 (converted from g/kw-hr). Internet link to CARB's "Off-Road Compression-Ignition Engine Regulatory and Certification" page: <http://arb.ca.gov/msprog/offroad/ofcie/ofciectp/ofciectp.htm#reg>

Power Rating (bhp)	Tier	Model Year	NO <sub>x</sub>	HC	NMHC +NO <sub>x</sub>	CO	PM
600 ≤ hp < 750	1	1996 - 2001	6.9	1.0	-	8.5	0.4
	2	2002 - 2005	-	-	4.8	2.6	0.15
	3	2006 - 2010			3.0		
	4I	2011 - 2013	1.5	0.14	-		0.01
	4F	2014+	0.29				
≥ 750	1	2000 - 2005	6.9	1.0	-	8.5	0.4
	2	2006 - 2010	-	-	4.8	2.6	0.15
	4I	2011 - 2014	2.6	0.3	-		0.07
	4F	2015+		0.14			0.03

# Appendix C

## GHG Emission Calculations

Green House Gas (GHG) emissions for this dairy are from project N-1122426, unless otherwise noted. With this project there are no proposed changes to the permitted dairy operations, so GHG emissions from those permit units will not change with this project.

N-5654-6-0: GHG emissions equal:

$$50 \text{ hr/yr} \times 685 \text{ bhp-hr} \times 0.000187 \text{ metric tons-CO}_{2e}\text{/bhp-hr} = 6.41 \text{ metric tons CO}_{2e}\text{/yr}$$
$$(6.41 \text{ metric tons CO}_{2e} \times 2,205 \text{ lbs/metric ton}) + 2,000 \text{ lbs/ton} = 7.07 \text{ tons CO}_{2e}\text{/yr}$$

N-8649

# Greenhouse Gas Emissions

Uncontrolled GHG Emission Factors (lb/-hd/yr)						
Animal Type	CH4 (Anaerobic Treatment Lagoon)	CH4 (Lagoon)	CH4 (manure spreading)	CH4 (solid manure storage)	CH4 (enteric)	CO2 equivalent multiplier for CH4
Milk Cows	513	307.8	3.5	27.7	271.5	21
Dry Cows	513	307.8	3.5	27.7	271.5	21
Large Heifers	110.4	110.4	1.6	---	151.6	21
Medium Heifers	110.4	110.4	1.6	---	100.5	21
Small Heifers	110.4	110.4	1.6	---	100.5	21
Calves	---	---	---	---	---	---

Uncontrolled GHG Emission Factors (lb/-hd/yr)					
Animal Type	N2O (Anaerobic Treatment Lagoon)	N2O (manure spreading)	N2O (solid manure storage)	N2O (enteric)	N2O equivalent multiplier for N2O
Milk Cows	1.5	0	2.6	0	310
Dry Cows	1.5	0	2.6	0	310
Large Heifers	1.4	0	---	0	310
Medium Heifers	1.4	0	---	0	310
Small Heifers	1.4	0	---	0	310
Calves	---	0	---	0	---

CO2e from CH4 = (CH4 (anaerobic treatment) lagoon + CH4 manure spreading + CH4 solid manure storage + CH4 enteric) x 21 x 0.9072 metric tons/short tons + 2000 lb/ton

CO2e from N2O = (N2O anaerobic treatment lagoon + N2O manure spreading + N2O solid manure storage + N2O enteric) x 310 x 0.9072 metric tons/short tons + 2000 lb/ton

Pre-Project: Does the facility have an anaerobic treatment lagoon? no  
 Post-Project: Does the facility have an anaerobic treatment lagoon? no

Pre-Project CO2 Equivalent Emission Factors from Animal Type (metric tons-hd/yr)				
Animal Type	CO2e for CH4	CO2e for N2O	CO2e Total	CO2e Total
Milk Cows	5.8	0.4	6.2	6.2
Dry Cows	5.8	0.4	6.2	6.2
Large Heifers	2.5	0.0	2.5	2.5
Medium Heifers	2.0	0.0	2.0	2.0
Small Heifers	2.0	0.0	2.0	2.0
Calves	0.0	0.0	0.0	0.0

Pre-Project Total GHG Emissions			
Animal Type	Herd Size (hd)	CO2e (metric tons hd/yr)	CO2e Total (metric tons/yr)
Milk Cows	0	6.2	0
Dry Cows	0	6.2	0
Large Heifers	910	2.5	2,275
Medium Heifers	0	2.0	0
Small Heifers	0	2.0	0
Calves	0	0.0	0
Total			2,275

Post-Project CO2 Equivalent Emission Factors from Animal Type (metric tons-hd/yr)				
Animal Type	CO2e for CH4	CO2e for N2O	CO2e Total	CO2e Total
Milk Cows	5.8	0.4	6.2	6.2
Dry Cows	5.8	0.4	6.2	6.2
Large Heifers	2.5	0.0	2.5	2.5
Medium Heifers	2.0	0.0	2.0	2.0
Small Heifers	2.0	0.0	2.0	2.0
Calves	0.0	0.0	0.0	0.0

Post-Project Total GHG Emissions			
Animal Type	Herd Size (hd)	CO2e (metric tons-hd/yr)	CO2e Total (metric tons/yr)
Milk Cows	0	6.2	0
Dry Cows	0	6.2	0
Large Heifers	910	2.5	2,275
Medium Heifers	0	2.0	0
Small Heifers	0	2.0	0
Calves	0	0.0	0
Total			2,275

Change in Project GHG Emissions			
Animal Type	Pre-Project CO2e (metric tons/yr)	Post-Project CO2e (metric tons/yr)	Change (metric tons/yr)
Milk Cows	0	0	0
Dry Cows	0	0	0
Large Heifers	2,275	2,275	0
Medium Heifers	0	0	0
Small Heifers	0	0	0
Calves	0	0	0
Total			0

Per District Policy, project specific greenhouse gas emissions less than or equal to 250 metric tons-CO2e/year are considered to be zero for District permitting purposes and are exempt from further environmental review.

# Greenhouse Gas Emissions N-5657

Animal Type	Uncontrolled GHG Emission Factors (lbs-hd/yr)			
	CH4 (Anaerobic Treatment Lagoon)	CH4 (Lagoon)	CH4 (manure spreading)	CH4 (solid manure storage)
Milk Cows	513	307.8	3.5	27.7
Dry Cows	513	307.8	3.5	27.7
Large Heifers	110.4	110.4	1.6	151.6
Medium Heifers	110.4	110.4	1.6	100.5
Small Heifers	110.4	110.4	1.6	100.5
Calves	--	--	--	--

Animal Type	Uncontrolled GHG Emission Factors (lbs-hd/yr)		
	N2O (Anaerobic Treatment Lagoon)	N2O (solid manure spreading)	N2O (solid manure storage)
Milk Cows	1.5	0	2.6
Dry Cows	1.5	0	2.6
Large Heifers	1.4	0	--
Medium Heifers	1.4	0	--
Small Heifers	1.4	0	--
Calves	--	0	--

CO<sub>2</sub>e from CH<sub>4</sub> = [CH<sub>4</sub> (anaerobic treatment) lagoon + CH<sub>4</sub> manure spreading + CH<sub>4</sub> solid manure storage + CH<sub>4</sub> enteric] x 21 x 0.9072 metric tons/short tons + 2000 lb/ton

CO<sub>2</sub>e from N<sub>2</sub>O = [N<sub>2</sub>O anaerobic treatment lagoon + N<sub>2</sub>O manure spreading + N<sub>2</sub>O solid manure storage + N<sub>2</sub>O enteric] x 310 x 0.9072 metric tons/short tons + 2000 lb/ton

Pre-Project: Does the facility have an anaerobic treatment lagoon?  no  
 Post-Project: Does the facility have an anaerobic treatment lagoon?  no

Animal Type	Pre-Project CO <sub>2</sub> e Equivalent Emission Factors from Animal Type (metric tons-hd/yr)		
	CO <sub>2</sub> e for CH <sub>4</sub>	CO <sub>2</sub> e for N <sub>2</sub> O	CO <sub>2</sub> e Total
Milk Cows	5.8	0.4	6.2
Dry Cows	5.8	0.4	6.2
Large Heifers	2.5	0.0	2.5
Medium Heifers	2.0	0.0	2.0
Small Heifers	2.0	0.0	2.0
Calves	0.0	0.0	0.0

Pre-Project Total GHG Emissions		
Animal Type	Herd Size (hd)	CO <sub>2</sub> e Total (metric tons/yr)
Milk Cows	1,800	11,160
Dry Cows	200	1,240
Large Heifers	1,480	3,700
Medium Heifers	0	0
Small Heifers	0	0
Calves	0	0
<b>Total</b>		<b>16,100</b>

Animal Type	Post-Project CO <sub>2</sub> e Equivalent Emission Factors from Animal Type (metric tons-hd/yr)		
	CO <sub>2</sub> e for CH <sub>4</sub>	CO <sub>2</sub> e for N <sub>2</sub> O	CO <sub>2</sub> e Total
Milk Cows	5.8	0.4	6.2
Dry Cows	5.8	0.4	6.2
Large Heifers	2.5	0.0	2.5
Medium Heifers	2.0	0.0	2.0
Small Heifers	2.0	0.0	2.0
Calves	0.0	0.0	0.0

Post-Project Total GHG Emissions		
Animal Type	Herd Size (hd)	CO <sub>2</sub> e Total (metric tons/yr)
Milk Cows	2,300	14,260
Dry Cows	410	2,542
Large Heifers	2,095	5,238
Medium Heifers	0	0
Small Heifers	0	0
Calves	0	0
<b>Total</b>		<b>22,040</b>

Change in Project GHG Emissions			
Animal Type	Pre-Project CO <sub>2</sub> e (metric tons/yr)	Post-Project CO <sub>2</sub> e (metric tons/yr)	Change (metric tons/yr)
Milk Cows	11,160	14,260	3,100
Dry Cows	1,240	2,542	1,302
Large Heifers	3,700	5,238	1,538
Medium Heifers	0	0	0
Small Heifers	0	0	0
Calves	0	0	0
<b>Total</b>		<b>5,940</b>	<b>5,940</b>



N-6864

# Greenhouse Gas Emissions

Uncontrolled GHG Emission Factors (lb-hd/yr)						
Animal Type	CH4 (Anaerobic Treatment Lagoon)	CH4 (Lagoon)	CH4 (manure spreading)	CH4 (solid manure storage)	CH4 (enteric)	CO2 equivalent multiplier for CH4
Milk Cows	513	307.8	3.5	27.7	271.5	21
Dry Cows	513	307.8	3.5	27.7	271.5	21
Large Heifers	110.4	110.4	1.6	-	151.8	21
Medium Heifers	110.4	110.4	1.6	-	100.5	21
Small Heifers	110.4	110.4	1.6	-	100.5	21
Calves	-	-	-	-	-	-

Uncontrolled GHG Emission Factors (lb-hd/yr)					
Animal Type	N2O (Anaerobic Treatment Lagoon)	N2O (manure spreading)	N2O (solid manure storage)	N2O (enteric)	N2O equivalent multiplier for N2O
Milk Cows	1.5	0	2.8	0	310
Dry Cows	1.5	0	2.8	0	310
Large Heifers	1.4	0	-	0	310
Medium Heifers	1.4	0	-	0	310
Small Heifers	1.4	0	-	0	310
Calves	-	0	-	0	-

CO2e from CH4 = [CH4 (anaerobic treatment) lagoon + CH4 manure spreading + CH4 solid manure storage + CH4 enteric] x 21 x 0.9072 metric tons/short tons ÷ 2000 lb/ton

CO2e from N2O = [N2O anaerobic treatment lagoon + N2O manure spreading + N2O solid manure storage + N2O enteric] x 310 x 0.9072 metric tons/short tons ÷ 2000 lb/ton

Pre-Project: Does the facility have an anaerobic treatment lagoon?  no  
 Post-Project: Does the facility have an anaerobic treatment lagoon?  no

Pre-Project CO2 Equivalent Emission Factors from Animal Type (metric tons-hd/yr)				
Animal Type	CO2e for CH4	CO2e for N2O	CO2e Total	CO2e Total
Milk Cows	5.8	0.4	6.2	6.2
Dry Cows	5.8	0.4	6.2	6.2
Large Heifers	2.5	0.0	2.5	2.5
Medium Heifers	2.0	0.0	2.0	2.0
Small Heifers	2.0	0.0	2.0	2.0
Calves	0.0	0.0	0.0	0.0

Pre-Project Total GHG Emissions			
Animal Type	Head Size (hd)	CO2e (metric tons-hd/yr)	CO2e Total (metric tons/yr)
Milk Cows	610	6.2	3,782
Dry Cows	100	6.2	620
Large Heifers	615	2.5	1,538
Medium Heifers	0	2.0	0
Small Heifers	0	2.0	0
Calves	0	0.0	0
<b>Total</b>			<b>5,940</b>

Change in Project GHG Emissions			
Animal Type	Pre-Project CO2e (metric tons/yr)	Post-Project CO2e (metric tons/yr)	Change (metric tons/yr)
Milk Cows	3782	0	-3,782
Dry Cows	620	0	-620
Large Heifers	1538	0	-1,538
Medium Heifers	0	0	0
Small Heifers	0	0	0
Calves	0	0	0
<b>Total</b>			<b>-5,940</b>

Post-Project CO2 Equivalent Emission Factors from Animal Type (metric tons-hd/yr)				
Animal Type	CO2e for CH4	CO2e for N2O	CO2e Total	CO2e Total
Milk Cows	5.8	0.4	6.2	6.2
Dry Cows	5.8	0.4	6.2	6.2
Large Heifers	2.5	0.0	2.5	2.5
Medium Heifers	2.0	0.0	2.0	2.0
Small Heifers	2.0	0.0	2.0	2.0
Calves	0.0	0.0	0.0	0.0

Post-Project Total GHG Emissions			
Animal Type	Head Size (hd)	CO2e (metric tons-hd/yr)	CO2e Total (metric tons/yr)
Milk Cows	0	6.2	0
Dry Cows	0	6.2	0
Large Heifers	0	2.5	0
Medium Heifers	0	2.0	0
Small Heifers	0	2.0	0
Calves	0	0.0	0
<b>Total</b>			<b>0</b>

Per District Policy, project specific greenhouse gas emissions less than or equal to 230 metric tons-CO2e/year are considered to be zero for District permitting purposes and are exempt from further environmental review.

## Appendix D 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

Using the emission calculations in this evaluation, PE2<sub>quarterly</sub> and BE<sub>quarterly</sub> 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:  $\Delta PE$  (lb/qtr) = PE (lb/yr)  $\div$  4 qtr/yr

N-5654-6-0:

$$\begin{aligned} \Delta PE_{NOx} &= 209 \text{ lb-NOx/year} - 0 \text{ lb-NOx/year} &= 209 \text{ lb/year} \\ \Delta PE_{CO} &= 68 \text{ lb-CO/year} - 0 \text{ lb-CO/year} &= 68 \text{ lb/year} \\ \Delta PE_{VOC} &= 11 \text{ lb-VOC/year} - 0 \text{ lb-VOC/year} &= 11 \text{ lb/year} \\ \Delta PE_{PM10} &= 10 \text{ lb-PM10/year} - 0 \text{ lb-PM10/year} &= 10 \text{ lb/year} \\ \Delta PE_{SOx} &= 0 \text{ lb-SOx/year} - 0 \text{ lb-SOx/year} &= 0 \text{ lb/year} \end{aligned}$$

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
<b>NOx</b>	52	52	52	53
<b>CO</b>	17	17	17	17
<b>VOC</b>	2	3	3	3
<b>PM<sub>10</sub></b>	2	2	3	3
<b>SOx</b>	0	0	0	0

# **Appendix E**

## **BACT Guideline and BACT Analysis**

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# 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**

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/hp-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		

\*Note: for emergency engines  $50 \leq \text{bhp} < 75$ , Tier 4 Interim certification is the requirement; for emergency engines  $75 \leq \text{bhp} < 750$  bhp, Tier 3 certification is the requirement; for emergency engines  $\geq 750$  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 NO<sub>x</sub> and VOC emissions:

BACT Guideline 3.1.1 (September 10, 2013) 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<sub>x</sub> 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 IIII – 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 IIII 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 IIII.

Maximum Engine Power	Tier	Model Year(s)	PM	NMHC+NOx	CO
50 ≤ HP < 75 (37 ≤ kW < 56)	2	2007	0.15 (0.20)	5.6 (7.5)	3.7 (5.0)
	4i	2008+		3.5 (4.7)	
75 ≤ HP < 100 (56 ≤ kW < 75)	2	2007	0.15 (0.20)	5.6 (7.5)	3.7 (5.0)
	3	2008+		3.5 (4.7)	
100 ≤ HP < 175 (75 ≤ kW < 130)	3	2007	0.15 (0.20)	3.0 (4.0)	3.7 (5.0)
		2008+			
175 ≤ HP < 300 (130 ≤ kW < 225)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
300 ≤ HP < 600 (225 ≤ kW < 450)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
600 ≤ HP ≤ 750 (450 ≤ kW ≤ 560)	3	2007	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)
		2008+			
HP > 750 (kW > 560)	2	2007	0.15 (0.20)	4.8 (6.4)	2.6 (3.5)
		2008+			

Additionally, 40 CFR Subpart IIII 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 or equal to 75 hp and less than 100 hp, the Tier required is Tier 3.

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 685 bhp. Therefore, the applicable control technology option is EPA Tier 3 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 NO<sub>x</sub> and VOC is the use of an EPA Tier 3 certified engine. The applicant is proposing such a unit. Therefore, the District's BACT requirements will be satisfied.

## Top Down BACT Analysis for PM<sub>10</sub> emissions:

BACT Guideline 3.1.1 (September 10, 2013) 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 PM<sub>10</sub> emissions:

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

BACT Guideline 3.1.1 identifies only the following option:

- *Use of an engine with PM<sub>10</sub> emission rate of 0.15 g/bhp-hr or the latest EPA Tier Certification level for applicable horsepower range, whichever is more stringent (ATCM)*

#### 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<sub>10</sub> is the use of an EPA Tier 3 certified engine with PM<sub>10</sub> emission rate of 0.15 g/bhp-hr, or less. The applicant is proposing such a unit. Therefore, the District's BACT requirements will be satisfied.



# **Appendix F**

## RMR Summary

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## San Joaquin Valley Air Pollution Control District Risk Management Review

To: Fred Cruz – Permit Services  
 From: Seth Lane – Technical Services  
 Date: February 13, 2017  
 Facility Name: Raymond & Sue Quaresma Dairy  
 Location: 26920 S. Union Rd. Manteca  
 Application #(s): N-5654-6-0  
 Project #: N-1170107

### A. RMR SUMMARY

RMR Summary			
Categories	Diesel ICE (Unit 6-0)	Project Totals	Facility Totals
Prioritization Score	N/A <sup>1</sup>	N/A <sup>1</sup>	>1.0
Acute Hazard Index	N/A <sup>2</sup>	N/A <sup>2</sup>	0.04
Chronic Hazard Index	0.00	0.00	0.27
Maximum Individual Cancer Risk	7.74E-08	7.74E-08	6.50E-06
T-BACT Required?	No		
Special Permit Requirements?	Yes		

<sup>1</sup>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.

<sup>2</sup>Acute Hazard Index was not calculated 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.

### Proposed Permit Requirements

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

#### Unit # 6-0

1. The PM10 emissions rate shall not exceed 0.13 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 50 hours per calendar year.

## B. RMR REPORT

Technical Services received a request on February 8, 2017, to perform an Ambient Air Quality Analysis and a Risk Management Review for a 685 BHP diesel-fired emergency IC engine powering an electrical generator.

### II. Analysis

Toxic emissions for this proposed unit were calculated and provided by the processing engineer for diesel particulate matter. 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 for Permitting New and Modified Sources (APR 1905, May 28, 2015), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 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 Tracy 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:

<b>Analysis Parameters Unit 6-0</b>			
<b>Source Type</b>	Point	<b>Location Type</b>	Rural
<b>Stack Height (m)</b>	2.79	<b>Closest Receptor (m)</b>	137.16
<b>Stack Diameter. (m)</b>	0.127	<b>Type of Receptor</b>	Residential
<b>Stack Exit Velocity (m/s)</b>	97.17	<b>Max Hours per Year</b>	50
<b>Stack Exit Temp. (°K)</b>	800.22	<b>Fuel Type</b>	Diesel
		<b>PM10 (lbs/yr)</b>	10

Technical Services performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub> with the emission rates below:

Unit #	NO <sub>x</sub> (Lbs.)		SO <sub>x</sub> (Lbs.)		CO (Lbs.)		PM <sub>10</sub> (Lbs.)	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
6-0	0	209	0	0	0	0	0	10

The results from the Criteria Pollutant Modeling are as follows:

### Criteria Pollutant Modeling Results\*

	Background Site	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Hazleton-Stockton (2015)	NA <sup>1</sup>	X	NA <sup>1</sup>	X	X
NO <sub>x</sub>	Tracy Airport (2015)	NA <sup>1</sup>	X	X	X	Pass
SO <sub>x</sub>	Fresno – Garland (2015)	NA <sup>1</sup>	NA <sup>1</sup>	X	NA <sup>1</sup>	Pass
PM <sub>10</sub>	Manteca (2015)	X	X	X	NA <sup>1</sup>	Pass <sup>2</sup>
PM <sub>2.5</sub>	Manteca (2015)	X	X	X	NA <sup>1</sup>	Pass <sup>3</sup>

<sup>1</sup>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.

<sup>2</sup>The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

<sup>3</sup>The court has vacated EPA's PM<sub>2.5</sub> SILs. Until such time as new SIL values are approved, the District will use the corresponding PM<sub>10</sub> SILs for both PM<sub>10</sub> and PM<sub>2.5</sub> analyses.

### III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk factor associated with the 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.

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

### IV. Attachments

- A. RMR request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Facility Summary
- D. AAQA Summary

# Raymond & Sue Quaresma Dairy

Facility N-5654

## Legend

26290 S Union Rd

26290 S Union Rd

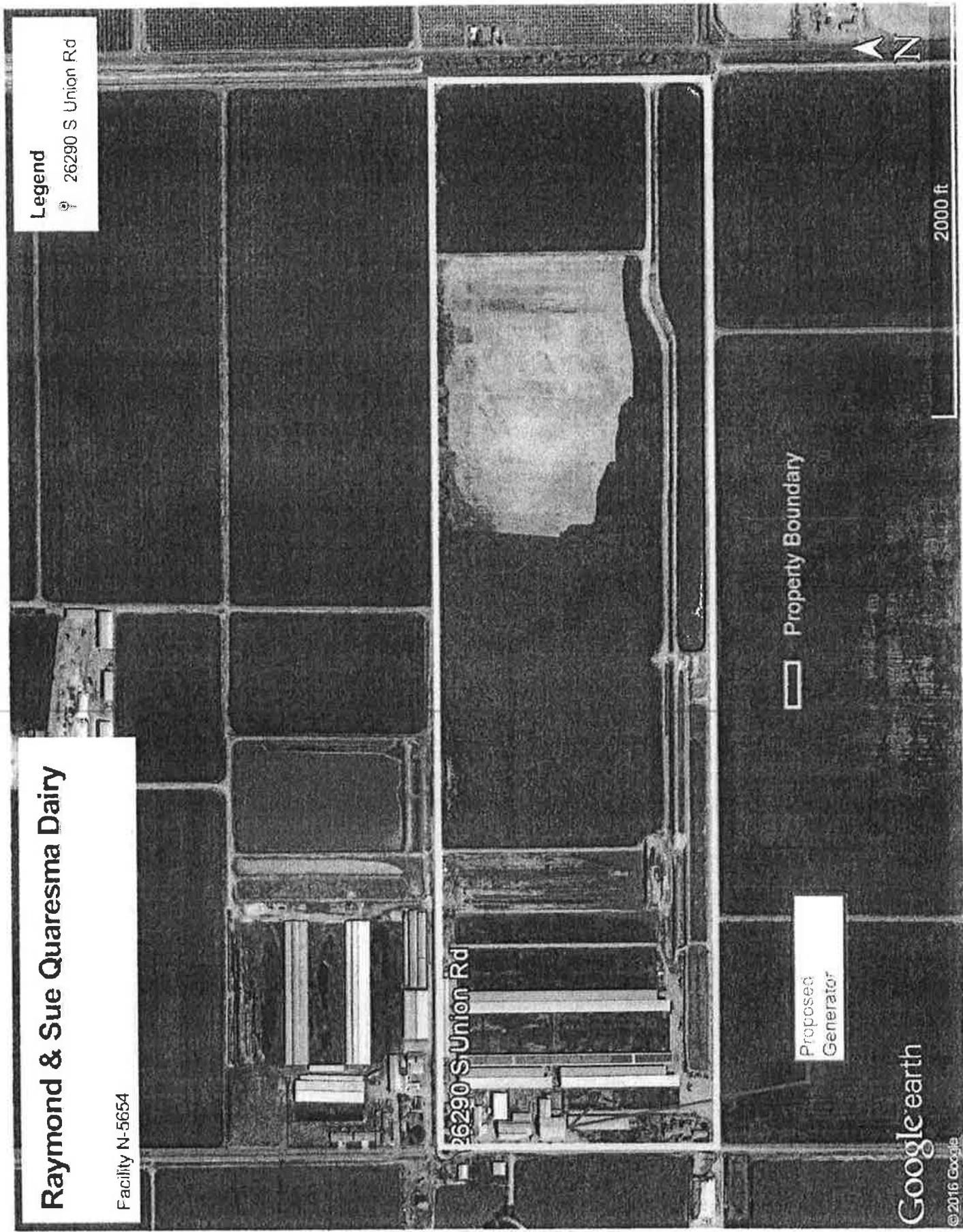
Proposed  
Generator

Property Boundary

2000 ft

Google earth

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# Raymond & Sue Quaresma Dairy

Facility N-5654

## Legend

26290 S Union Rd

26290 S Union Rd

Proposed  
Generator  
Location, at the  
Milk Barn



800 ft

Google earth

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