

# YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Galileo Court, Suite 103; Davis, CA 95618

## Diesel Fired Emergency Internal Combustion Engine Emission Evaluation

**ENGINEER:** Alex Huth

**ATC #** C-13-06  
**SIC Code #** 8221  
**UTM E** 608.8 km  
**UTM N** 4266.2 km

**COMPANY NAME:** University of California, Davis

**ENGINE LOCATION:** The engine will be located at CNPRC - Respiratory Disease Center, 190 North Colony Road, Zone S057, CAA 4923 in Davis. The engine will not be located within 1,000 feet of a K-12 school and is not subject to the requirements of H&S 42301.6.

**PROPOSAL:** The applicant is proposing to install a diesel fired emergency internal combustion (IC) engine.

The facility is currently operating under Title V Operating Permit F-00454-23, proposed January 11, 2012. This evaluation will serve as both the District emission evaluation and the Title V Statement of Basis. This evaluation reflects only the requirements pertaining to C-13-06. Emission units that are not affected by this proposal were evaluated in the original Statement of Basis or the subsequent iterations and will not be reviewed in this evaluation.

The changes to the Title V permit will also include administrative amendments.

**PROCESS:** The engine is used to power an emergency generator.

**FLOW DIAGRAM:** None required.

**IDENTIFICATION:** P-4-13

**EQUIPMENT:** 1,214 BHP diesel fired Caterpillar IC engine, Model No. C27, Serial No. TBD, Model Year 2012, EPA Certified Tier II Engine

**CONTROL EQUIPMENT:** Aftercooler and turbocharger

**APPLICATION DATA:**

<u>Operating Schedule</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Daily Operation =	24 hours/day	Td	Applicant
Max. 1st Quarter Operation =	200 hours/quarter	T1	Applicant
Max. 2nd Quarter Operation =	200 hours/quarter	T2	Applicant
Max. 3rd Quarter Operation =	200 hours/quarter	T3	Applicant
Max. 4th Quarter Operation =	200 hours/quarter	T4	Applicant
Max. Yearly Operation =	200 hours/year	Ty	Applicant

<u>Engine Data</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Maximum BHP Rating =	1214 BHP	HP	Manufacturer's Data
Exhaust Volume =	6,014 ACFM	EV	Manufacturer's Data
Exhaust Temperature =	1,413 Degrees Rankine (F+460)	ET	Manufacturer's Data
Hourly Fuel Consumption =	57.3 Gallons	FT	Manufacturer's Data

**ASSUMPTIONS:**

<u>Assumptions</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Sulfur Content of Fuel =	0.0015 %	SC	CARB Certified Diesel
Standard Temperature =	528 Degrees Rankine (F+460)	ST	STAPPA-ALAPCO, Pg. 1-7 (5/30/91)
Moisture Content =	10 %	PM	STAPPA-ALAPCO, Pg. 1-7 (5/30/91)
BTU Content =	19,300 BTU/lb	BC	AP-42, Table 3.4-1(a) (10/96)
Density =	7.1 lb/gallon	DE	AP-42, Table 3.4-1(a) (10/96)

<u>Diesel Particulate Control</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Particulate Controls =	No		Applicant

Baseline Reduction = 0 % CE Manufacturer's Data

**EMISSION FACTORS:**

	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
VOC =	0.09 g/bhp-hr	EFvoc	SQAQMD ICE Cert. Data
CO =	0.75 g/bhp-hr	EFco	SQAQMD ICE Cert. Data
NOx =	4.01 g/bhp-hr	EFnox	SQAQMD ICE Cert. Data
SOx =	0.0055 g/bhp-hr	EFsox	AP-42, Table 3.4-1 (10/96) *
PM10 =	0.06 g/bhp-hr	EFpm	SQAQMD ICE Cert. Data **

\* Only the emission factor listed in Table 3.4-1 is used since it assumes all fuel bound sulfur is converted to SOx.

\*\* All particulate matter is assumed to be less than 1 micrometer aerodynamic diameter (AP-42, Section 3.3).

**CALCULATIONS:**

**1. Determine the Permitted Diesel Fuel Limits:**

Daily Diesel Limit = Td * FT =	1,375 gallons
1st Quarter Diesel Limit = T1 * FT =	11,460 gallons
2nd Quarter Diesel Limit = T2 * FT =	11,460 gallons
3rd Quarter Diesel Limit = T3 * FT =	11,460 gallons
4th Quarter Diesel Limit = T4 * FT =	11,460 gallons
Yearly Diesel Limit = Ty * FT =	11,460 gallons

**2. Determine Dry Standard Cubic Feet of Exhaust:**

$$\text{DSCFM Exhaust} = \text{EV} * \text{ST/ET} * (100\% - \text{PM}) = 2,023.3 \text{ dscfm}$$

Formula  
Symbol  
SCFM

**3. Determine Yearly MMBtu combusted in Engine for Toxics:**

$$\text{Yearly MMBtu} = \text{Ty} * \text{FT} * \text{DE} * \text{BC} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = 1,570.4 \text{ MMBtu/year}$$

**EMISSION CALCULATIONS:**

**1. Determine VOC Emissions:**

Max Daily VOC Emissions = Td * HP * EFvoc * (1 lb/453.6 g) =	5.8 lb/day
1st Quarter VOC Emissions = T1 * HP * EFvoc * (1 lb/453.6 g) =	48 lb/quarter
2nd Quarter VOC Emissions = T2 * HP * EFvoc * (1 lb/453.6 g) =	48 lb/quarter
3rd Quarter VOC Emissions = T3 * HP * EFvoc * (1 lb/453.6 g) =	48 lb/quarter
4th Quarter VOC Emissions = T4 * HP * EFvoc * (1 lb/453.6 g) =	48 lb/quarter
Max Yearly VOC Emissions = Ty * HP * EFvoc * (1 lb/453.6 g) * (1 ton/2,000 lb) =	0.02 tons/year

**2. Determine CO Emissions:**

Max. Daily CO Emissions = Td * HP * EFco * (1 lb/453.6 g) =	48.2 lb/day
1st Quarter CO Emissions = T1 * HP * EFco * (1 lb/453.6 g) =	401 lb/quarter
2nd Quarter CO Emissions = T2 * HP * EFco * (1 lb/453.6 g) =	401 lb/quarter
3rd Quarter CO Emissions = T3 * HP * EFco * (1 lb/453.6 g) =	401 lb/quarter
4th Quarter CO Emissions = T4 * HP * EFco * (1 lb/453.6 g) =	401 lb/quarter
Max. Yearly CO Emissions = Ty * HP * EFco * (1 lb/453.6 g) * (1 ton/2,000 lb) =	0.20 tons/year

**3. Determine NOx Emissions:**

Max. Hourly NOx Emissions = HP * EFnox * (1 lb/453.6 g) =	10.7 lb/hour
Max. Daily NOx Emissions = Td * HP * EFnox * (1 lb/453.6 g) =	257.6 lb/day
1st Quarter NOx Emissions = T1 * HP * EFnox * (1 lb/453.6 g) =	2,146 lb/quarter
2nd Quarter NOx Emissions = T2 * HP * EFnox * (1 lb/453.6 g) =	2,146 lb/quarter
3rd Quarter NOx Emissions = T3 * HP * EFnox * (1 lb/453.6 g) =	2,146 lb/quarter
4th Quarter NOx Emissions = T4 * HP * EFnox * (1 lb/453.6 g) =	2,146 lb/quarter
Max. Yearly NOx Emissions = Ty * HP * EFnox * (1 lb/453.6 g) * (1 ton/2,000 lb) =	1.07 tons/year

**4. Determine SOx Emissions:**

Max. Hourly SOx Emissions = HP * EFsox * (1 lb/453.6 g) =	0.0 lb/hour
Max. Daily SOx Emissions = Td * HP * EFsox * (1 lb/453.6 g) =	0.4 lb/day
1st Quarter SOx Emissions = T1 * HP * EFsox * (1 lb/453.6 g) =	3 lb/quarter

2nd Quarter SOx Emissions = T2 * HP * EFsox * (1 lb/453.6 g) =	3 lb/quarter
3rd Quarter SOx Emissions = T3 * HP * EFsox * (1 lb/453.6 g) =	3 lb/quarter
4th Quarter SOx Emissions = T4 * HP * EFsox * (1 lb/453.6 g) =	3 lb/quarter
Max. Yearly SOx Emissions = Ty * HP * EFsox * (1 lb/453.6 g) * (1 ton/2,000 lb) =	0.00 tons/year

**5. Determine PM10 Emissions:**

Max. Hourly PM10 Ems. = HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	0.2 lb/hour
Max. Daily PM10 Ems. = Td * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	3.9 lb/day
1st Quarter PM10 Ems. = T1 * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	32 lb/quarter
2nd Quarter PM10 Ems. = T2 * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	32 lb/quarter
3rd Quarter PM10 Ems. = T3 * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	32 lb/quarter
4th Quarter PM10 Ems. = T4 * HP * EFpm * (1 lb/453.6 g) * (100%-CE) =	32 lb/quarter
Yearly PM10 Ems. = Ty * HP * EFpm * (1 lb/453.6 g) * (1 ton/2,000 lb) * (100%-CE) =	0.02 tons/year

**6. Determine Particulate Matter Emission Concentration:**

PM Conc. = [PM lb/hr] * (7,000 grains/lb) * (1 hr/60 min) * (1/SCFM) =	0.009 gr/dscf
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**7. Determine SOx Emission Concentration:**

SOx % = [SOx lb/hr] * (385 scf/lb-mole) * (lb-mole/64 lb) * (1 hr/60 min) * (1/SCFM) * 100% =	0.0001 %
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**8. Determine Particulate Matter Emission Rate:**

PM Emission Rate = Ty * HP * EFpm * (1 year/8,760 hrs) * (1 hr/3,600 sec) * (100%-CE) =	0.0005 grams/sec
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**Formula  
Symbol**  
ER

**RULE & REGULATION COMPLIANCE EVALUATION:**

**District Rule 2.3-Ringelmann**

This rule specifies the allowable opacity limit for all sources operating in the District.

**Compliance Status:** The rule applies to any visible emissions at the stationary source. The version of the rule used in this evaluation is the rule adopted on January 13, 2010 and included in the current California State Implementation Plan (SIP). The source is currently in compliance with the requirements of the rule.

**Requirement:** A person shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than three (3) minutes in any one hour which is:

- a. As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or
- b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection 301.2 a. of this rule.

**Permit Condition:** The permit holder shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one hour which is:

- a. As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart; or
- b. Greater than 20% opacity. [District Rule 2.3/C-13-06]

**District Rule 2.5-Nuisance**

This rule requires that sources are not a public nuisance.

**Compliance Status:** The rule applies to all emission units at the stationary source. The source is currently in compliance with the requirements of the rule.

**Permit Condition:** The Permit Holder shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause to have a natural tendency to cause injury or damage to business or property.

A condition will not be placed on the ATC, but will be added to the PTO upon implementation.

[The permit condition is federally enforceable because it derives from District Rule 2.5 - Nuisance which is currently part of the SIP. The

District is taking steps to remove District Rule 2.5 from the SIP. Once the U.S. Environmental Protection Agency (EPA) has taken final action to remove District Rule 2.5 from the SIP, this permit condition will become State-enforceable only.]

**District Rule 2.11-Particulate Matter**

This rule specifies the allowable particulate matter (PM) emission concentration at standard conditions. For the purpose of this evaluation, the PM emissions are considered to be 100% PM10 (PM with an aerodynamic diameter of 10 microns or less).

**Compliance Status:** The proposed IC engine is subject to this rule. The version of the rule used in this evaluation is the rule adopted on January 13, 2010 and included in the current SIP.

**Requirement:** A person shall not release or discharge into the atmosphere, from any single source operation, dust fumes or total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions.

As shown above in Emission Calculations #6, the PM concentration is expected to be in compliance with this requirement.

<u>Emission Concentration (gr/dscf)</u>	<u>Allowable (gr/dscf)</u>	<u>Compliance</u>
0.009	0.1	Yes

The requirements of the SIP can be subsumed by the Authority of District Rule 3.4, New Source Review. P-4-13 is also subject to the federally applicable PM emission limit of 3.9 lbs/day (established by Rule 3.4, Section 409.2).

**Permit Condition:** PM10 emissions shall not exceed 3.9 lb/day, 32 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.02 tons/year. [District Rule 3.4/C-13-06]

**District Rule 2.12-Section A-Sulfur Compounds**

This rule specifies the allowable sulfur dioxide and particulate matter combustion contaminant emission rates at standard conditions. For the purposes of this evaluation, the sulfur oxide (SOx) emissions are considered to be 100% SO2.

**Compliance Status:** The proposed IC engine is subject to this rule. The rule applies to any source operation which emits, or may emit sulfur gaseous emissions and particulate matter combustion contaminants. The version of the rule used in this evaluation is the rule adopted on January 13, 2010 and included in the current SIP. The proposed engine is currently in compliance with the requirements of the rule.

**Requirement:** A person shall not discharge into the atmosphere from any single source of emission whatsoever, any one or more of the following contaminants, in any state or combination thereof, in excess of the following concentrations at the point of discharge:

- A. Sulfur compounds calculated as sulfur dioxide (SO2) 0.2%, by volume at standard conditions.
- B. Particulate Matter Combustion Contaminants: 0.1 grains per cubic foot of gas calculated to 12 percent of carbon dioxide (CO2) at standard conditions.

As shown above in Emission Calculations #7, the sulfur concentration (in percent) is expected to be in compliance with the requirement. Compliance with the particulate limit is demonstrated in Calculation #6 (See 2.11).

<u>Emission Concentration (% SOx as SO2)</u>	<u>Allowable (% SOx as SO2)</u>	<u>Compliance</u>
0.0001	0.2	Yes

The requirements of the SIP can be subsumed by the Authority of District Rule 3.4, New Source Review. P-4-13 is also subject to the federally applicable SOx emission limit of 0.4 lbs/day (established by Rule 3.4, Section 409.2).

**Permit Condition:** SOx emissions shall not exceed 0.4 lb/day, 3 lb/1st, 2nd, 3rd, and 4th calendar quarter, and negligible tons/year. [District Rule 3.4/C-13-06]

**District Rule 2.16 - Fuel Burning Heat or Power Generators**

This rule specifies the allowable sulfur dioxide, nitrogen oxides calculated as nitrogen dioxide, and combustion particulate limits for non-mobile fuel burning equipment for a heat or power generating unit in the District.

**Compliance Status:** The IC engine is subject to this rule. The version of the rule used in this evaluation is the rule adopted on October 1, 1971 and included in the current SIP. The proposed engine is currently in compliance with the requirements of the rule.

**Requirement:** A person shall not build, expand, or operate any non-mobile fuel burning equipment for a heat or power generator unit unless the discharge into the atmosphere of contaminants will not and does not exceed any one or more of the following rates:

- 1. 200 pounds per hour of sulfur compounds, calculated as sulfur dioxide (SO2);

2. 140 pounds per hour of nitrogen oxides, calculated as nitrogen dioxide (NO<sub>2</sub>);
3. 40 pounds per hour of combustion particulate derived from the fuel. [SIP approved version of District Rule 2.16]

<u>Pollutant</u>	<u>Allowable</u>	<u>Actual</u>	<u>Compliance</u>
SO <sub>x</sub>	200 lb/hr	0.0 lb/hr	Yes
NO <sub>x</sub>	140 lb/hr	10.7 lb/hr	Yes
PM	40 lb/hr	0.2 lb/hr	Yes

**Subsuming Demonstration:** The requirements of the SIP can be subsumed by the Authority of District Rule 3.4, New Source Review. P-4-13 is also subject to the federally applicable SO<sub>x</sub> emission limit of 0.4 lbs/day, NO<sub>x</sub> emission limit of 257.6 lbs/day and particulate emission limit of 3.9 lbs/day (established by Rule 3.4, Section 409.2).

**Permit Condition:** SO<sub>x</sub> emissions shall not exceed 0.4 lb/day, 3 lb/1st, 2nd, 3rd, and 4th calendar quarter, and negligible tons/year. [District Rule 3.4/C-13-06]

**Permit Condition:** NO<sub>x</sub> emissions shall not exceed 257.6 lb/day, 2,146 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 1.07 tons/year. [District Rule 3.4/C-13-06]

**Permit Condition:** PM<sub>10</sub> emissions shall not exceed 3.9 lb/day, 32 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.02 tons/year. [District Rule 3.4/C-13-06]

#### **District Rule 2.32-Stationary Internal Combustion Engines**

The purpose of the rule is to limit emissions of nitrogen oxides (NO<sub>x</sub>) and carbon monoxides (CO) from stationary internal combustion engines. The rule applies to any stationary internal combustion engines rated at more than 50 brake horsepower, operated on any gaseous fuel, including liquid petroleum gas, or diesel fuel. The rule shall not apply to engines used directly and exclusively for agricultural operations necessary for the growing of crops or the raising of fowl or animals.

**Compliance Status:** The IC engine is subject to this rule. The version of the rule used in this evaluation was adopted on October 10, 2001 and is part of the current SIP. The engine will have limited hours per year for maintenance operations and 200 hours per year for total use, and is therefore exempt from the rule (except Section 503) pursuant to Section 110.3. Section 503 requires that the source maintain a log of the engine's operating hours and that the log be retained for two years.

**Requirement:** An owner or operator claiming an exemption under Section 110.2 or 110.3 of this Rule shall maintain a log of operating hours for each engine. The log of operating hours shall be retained for two years and be made available to the Air Pollution Control Officer upon request.

**Subsuming Demonstration:** Title 17 CCR Section 93115-Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines, requires the owner or operator to maintain logs (see below). The District Rule 3.8, Federal Operating Permits requirement of Section 302.6.b requires records be retained for a period of five (5) years. The log and record-keeping requirements of Rule 2.32 will be subsumed by ATCM, Rule 3.4 and 3.8 requirements.

**Permit Condition:** The Permit Holder shall not operate the IC engine more than 200 hours per calendar year. [District Rule 3.4, §110.2/C-13-06]

**Permit Condition:** The Permit Holder shall maintain a monthly log of usage that shall list and document the nature of use for each of the following:

- a. Emergency use hours of operation;
- b. Maintenance and testing hours of operation;
- c. Hours of operation for emission testing to show compliance with Title 17 CCR, Section 93115.6(a)(3) and 93115.6(b)(3);
- d. Initial start-up hours; and
- e. Fuel use through the retention of fuel purchase records which indicate that the fuel used in the IC engine is CARB certified diesel fuel or an approved ATCM compliant alternative fuel. [District Rule 3.4, §402 and Title 17 CCR, Section 93115.10(f)(1)/C-13-06]

**Permit Condition:** The Permit Holder shall retain the log for a minimum of 60 months (5 years) from the date of entry. Log entries made within 24 months of the most recent entry shall be retained on-site and made immediately available to the District staff upon request. Log entries made from 25 to 60 months from most recent entry shall be made available to District staff within 5 working days from request. [District Rule 3.8, §302.6, District Rule 3.4 and Title 17 CCR, Section 93115.10(f)(2)/C-13-06]

#### **District Rule 3.1-General Permit Requirements**

The purpose of this rule is to provide an orderly procedure for the review of new sources of air pollution and of the modification and operation of existing sources through the issuance of permits.

**Compliance Status:** The source has satisfied the provisions of General Permit Requirements. The rule applies to all emission units at the stationary source. The version of the rule used in this evaluation was adopted on February 23, 1994 and is part of the current SIP. The General Permit Requirements are shown below.

**Permit Condition:** No person shall build, erect, alter, or replace any facility, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants, without first obtaining an authorization to construct from the Air Pollution Control Officer as specified in Section 401 of District Rule 3.1. [District Rule 3.1, §301.1]

**Permit Condition:** No person shall operate any facility, article, machine, equipment, or other contrivance, for which an authorization to construct is required by District Rules and Regulations without first obtaining a written permit from the Air Pollution Control Officer. [District Rule 3.1, §302.1]

**Permit Condition:** No person shall operate any facility, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, without obtaining a permit from the Air Pollution Control Officer or the Hearing Board. [District Rule 3.1, §302.2]

**Permit Condition:** To assure compliance with all applicable regulations, the Air Pollution Control Officer may impose written conditions on any authorization to construct or permit to operate. The Air Pollution Control Officer may, after 30-day notice to the permittee, add or amend written conditions on any permit upon annual renewal to ensure compliance with and enforceability of any applicable rule or regulation. Additional provisions, as required by Title V of the Federal Clean Air Act, for the reopening of permits are specified in Rule 3.8, FEDERAL OPERATING PERMITS. Commencing work or operation under such a revised permits shall be deemed acceptance of all of the conditions so specified. [District Rule 3.1, §402]

**Permit Condition:** The owner or operator of any facility, article, machine, equipment, or other contrivance for which a permit to operate is in effect shall notify the District office whenever a breakdown, malfunction, or operational upset condition exists which would tend to increase emissions of air pollutants or whenever any operating condition contrary to any provision of the permit to operate exists. Such notice shall be given to the District no later than four hours after occurrence during regular workday hours or no later than two hours of the District workday following an occurrence not during regular District workday hours. The notice shall provide the District information as to causes and corrective action being taken, with a schedule for return to required operating conditions. [District Rule 3.1, §405.3]

**District Rule 3.4-New Source Review**

This rule applies to all new stationary sources and emissions units and all modifications to existing stationary sources and emissions units which are subject to Rule 3.1, General Permit Requirements, and which, after construction or modification, emit or may emit any affected pollutants. This rule shall not apply to prescribed burning of forest, agriculture or range land, road construction or any other non-point source common to timber harvesting or agricultural practices. The purpose of this rule is to provide for the review of new and modified stationary air pollution sources and to provide mechanisms, including emission offsets, by which authorities to construct to such sources may be granted without interfering with the attainment or maintenance of ambient air quality standards.

**Compliance Status:** The source has satisfied the provisions of New Source Review. The New Source Review requirements will be imposed on the Authority to Construct (ATCs) issued to the source. The version of the rule used in this evaluation was adopted on August 13, 1997 and is part of the current SIP.

**PROPOSED EMISSION SUMMARY FOR NEW OR MODIFIED PERMIT**

	<u>Daily</u>	<u>Yearly</u>	
VOC	5.8 lb	0.02 tons	Use for annual billing
CO	48.2 lb	0.20 tons	Use for annual billing
NOx	257.6 lb	1.07 tons	Use for annual billing
SOx	0.4 lb	0.00 tons	Use for annual billing
PM10	3.9 lb	0.02 tons	Use for annual billing

  

	<u>Quarterly</u>			
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	48	48	48	48
CO (lb)	401	401	401	401
NOx (lb)	2,146	2,146	2,146	2,146
SOx (lb)	3	3	3	3
PM10 (lb)	32	32	32	32

**Previous quarterly potential to emit for modified permit\***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

\* This is a new emissions unit, therefore the previous potential to emit (PTE) is zero.

**Historic potential emissions for modified permit\***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

\* This is a new emissions unit, therefore the historic PTE is zero.

<u>Pollutant</u>	<u>Trigger</u> (lb/day)	<u>BACT</u>		<u>Quarterly Increase</u>	<u>BACT Trigger</u>
		<u>Proposed</u> (lb/day)			
VOC	10	6		Yes	No
CO	250	48		Yes	No
NOx	10	258		Yes	Yes
SOx	80	0		Yes	No
PM10	80	4		Yes	No

**OFFSETS**

**Quarterly permitted emissions for other permits at the stationary source\***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	13,315	13,367	13,480	13,548
CO (lb)	207,733	209,636	211,813	212,103
NOx (lb)	51,157	51,306	51,734	52,020
SOx (lb)	7,548	7,554	7,562	7,564
PM10 (lb)	10,565	10,626	10,707	10,731

\* Per Policy 28, the calculated PTE for all other permitted units not including emergency use IC engines (see QPTE sheet).

**Quarterly permitted emissions for the stationary source including proposed emissions\***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	13,315	13,367	13,480	13,548
CO (lb)	207,733	209,636	211,813	212,103
NOx (lb)	51,157	51,306	51,734	52,020
SOx (lb)	7,548	7,554	7,562	7,564
PM10 (lb)	10,565	10,626	10,707	10,731

\* Per Policy 28, since the proposed IC engine is to be used for emergency purposes, the unit's proposed PTE will not be included in the facility's total quarterly PTE calculations.

**Offset triggers**

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	7,500	7,500	7,500	7,500
CO (lb)	49,500	49,500	49,500	49,500
NOx (lb)	7,500	7,500	7,500	7,500
SOx (lb)	13,650	13,650	13,650	13,650
PM10 (lb)	13,650	13,650	13,650	13,650

**Quantity of offsets required \***

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	48	48	48	48
CO (lb)	401	401	401	401
NOx (lb)	2,146	2,146	2,146	2,146
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

\* The engine meets the requirements of District Rule 3.4, Section 110 and is exempt from the above calculated offset requirements.

**MAJOR MODIFICATION**

**Facility Total Potential to Emit\***

29.11 TPY VOC  
 424.12 TPY CO  
 155.95 TPY NOx  
 7.74 TPY SOx  
 20.27 TPY PM10

**Major Source Thresholds**

25 TPY VOC  
 100 TPY CO  
 25 TPY NOx  
 100 TPY SOx  
 100 TPY PM10

\* See QTPE sheet.

**Last five year emission aggregate\***

2.13 TPY VOC  
 4.18 TPY CO  
 10.46 TPY NOx  
 0.03 TPY SOx  
 0.43 TPY PM10

**Major Modification Thresholds**

25 TPY VOC  
 100 TPY CO  
 25 TPY NOx  
 40 TPY SOx  
 25 TPY PM10

\* See five year activity sheet.

**Result: The proposed modification is not a major modification**

**PUBLIC NOTICE**

**"Increase in historic potential to emit"**

48 lb VOC/quarter  
 401 lb CO/quarter  
 2,146 lb NOx/quarter  
 3 lb SOx/quarter  
 32 lb PM10/quarter

**Exemption level for notification**

7,500 lb VOC/quarter  
 49,500 lb CO/quarter  
 7,500 lb NOx/quarter  
 13,650 lb SOx/quarter  
 13,650 lb PM10/quarter

**Result: Public notice is not required**

**Permit Condition:** VOC emissions shall not exceed 5.8 lb/day, 48 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.02 tons/year. [District Rule 3.4/C-13-06]

**Permit Condition:** CO emissions shall not exceed 48.2 lb/day, 401 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.20 tons/year. [District Rule 3.4/C-13-06]

**Permit Condition:** NOx emissions shall not exceed 257.6 lb/day, 2,146 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 1.07 tons/year. [District Rule 3.4/C-13-06]

**Permit Condition:** SOx emissions shall not exceed 0.4 lb/day, 3 lb/1st, 2nd, 3rd, and 4th calendar quarter, and negligible tons/year. [District Rule 3.4/C-13-06]

**Permit Condition:** PM10 emissions shall not exceed 3.9 lb/day, 32 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.02 tons/year. [District Rule 3.4/C-13-06]

**Permit Condition:** The maximum amount of diesel consumption shall not exceed 1,375 gallons/day, 11,460 gallons/1st, 2nd, 3rd, and 4th calendar quarter, and 11,460 gallons/year. [District Rule 3.4/C-13-06]

**Permit Condition:** The Permit Holder shall only refuel the IC engine with CARB certified diesel fuel. [District Rule 3.4, Title 17 CCR, Section 93115.5 and 40 CFR Part 60.4207/C-13-06]

**Permit Condition:** The Permit Holder shall not operate the IC engine more than 50 hours per calendar year for maintenance and testing purposes, and such operation shall be scheduled in cooperation with the District so as to limit air quality impact. [District Rule 3.4, §110.1, Title 17 CCR, Section 93115.6(a)(3)(A) and 40 CFR Part 60.4211/C-13-06]

**Permit Condition:** The Permit Holder shall not operate the IC engine more than 200 hours per calendar year. [District Rule 3.4, §110.2/C-13-06]

**Permit Condition:** The Permit Holder shall not operate the IC engine for the supplying of power to a serving utility for distribution on

the grid. [District Rule 3.4, §110.3/C-13-06]

**Permit Condition:** The Permit Holder's operation of the IC engine for reasons other than maintenance purposes shall be limited to actual interruptions of electrical power by the serving utility. [District Rule 3.4, §110.4/C-13-06]

**Permit Condition:** The Permit Holder shall install and maintain a non-resettable hour meter with a minimum display capability of 9,999 hours. [District Rule 3.4, Title 17 CCR, Section 93115.10(d)(1) and 40 CFR Part 60.4209/C-13-06]

**Permit Condition:** The Permit Holder shall maintain a monthly log of usage that shall list and document the nature of use for each of the following:

- a. Emergency use hours of operation;
- b. Maintenance and testing hours of operation;
- c. Hours of operation for emission testing to show compliance with Title 17 CCR, Section 93115.6(a)(3) and 93115.6(b)(3);
- d. Initial start-up hours; and
- e. Fuel use through the retention of fuel purchase records which indicate that the fuel used in the IC engine is CARB certified diesel fuel or an approved ATCM compliant alternative fuel. [District Rule 3.4 and Title 17 CCR, Section 93115.10(f)(1)/C-13-06]

**Permit Condition:** The Permit Holder shall maintain the engine and control device according to the manufacturer's instructions or alternate procedures approved by the manufacturer. [District Rule 3.4 and 40 CFR Parts 60.4206 and 60.4211/C-13-06]

**Permit Condition:** The Permit Holder shall retain the log for a minimum of 60 months (5 years) from the date of entry. Log entries made within 24 months of the most recent entry shall be retained on-site and made immediately available to the District staff upon request. Log entries made from 25 to 60 months from most recent entry shall be made available to District staff within 5 working days from request. [District Rule 3.4, 3.8, §302.6 and Title 17 CCR, Section 93115.10(f)(2)/C-13-06]

#### **District Rule 3.8-Federal Operating Permits**

This rule implements the requirements of Title V of the Federal Clean Air Act as amended in 1990 (CAA) for permits to operate. Title V provides for the establishment of operating permit programs for sources which emit regulated air pollutants, including attainment and non-attainment pollutants.

**Compliance Status:** The Rule was originally adopted on January 26, 1994. The most recent revision dates April 11, 2001 and is part of the current SIP. The source is currently in compliance with the requirements of the rule.

Per Section 102, this rule applies to all major sources, acid rain units subject to Title IV of the Federal Clean Air Act (CAA), solid waste incinerators, and any other sources specifically designated by the rule or US EPA.

The facility is a federal major source due to potential to emit over 25 tons VOC per year, 100 tons CO per year, and 25 tons NOx per year. The facility has an existing Title V Permit. Revisions to the Title V permit will be processed immediately following the approval of this application. The proposed revisions to the Title V permit will concurrently undergo a 30-day public comment period and a 45-day EPA comment period. Enhanced NSR has been requested by the applicant, as allowed by District Rule 3.4. The requirements of this ATC will be incorporated into the Title V permit upon written request from the applicant after all noticing has been done and the project is completed.

The facility's Title V Permit will be issued with all applicable operating, monitoring, and recordkeeping requirements. Per Section 302.6, the source will be required to maintain all required records for a period of five (5) years.

#### **Title V General Requirements - Permit Conditions**

The following conditions will not be placed on the ATC or PTO. These requirements will be included in the Title V Operating Permit only.

#### **Permit Condition -Right of Entry:**

The permit shall require that the source allow the entry of the District, ARB, or U.S. EPA officials for the purpose of inspection and sampling, including:

- a. Inspection of the stationary source, including equipment, work practices, operations, and emissions-related activity;
- b. Inspection and duplication of records required by the permit to operate; and
- c. Source sampling or other monitoring activities. [District Rule 3.8, §302.10]

#### **Permit Condition -Compliance with Permit Conditions:**

The Permit Holder shall comply with all Title V permit conditions. [District Rule 3.8, §302.11a]

The permit does not convey property rights or exclusive privilege of any sort. [District Rule 3.8, §302.11b]

Non-compliance with any permit condition is grounds for permit termination, revocation and reissuance, modification, enforcement action, or denial of permit renewal. [District Rule 3.8, §302.11c]

The Permit Holder shall not use the "need to halt or reduce a permitted activity in order to maintain compliance" as a defense for non-compliance with any permit condition. [District Rule 3.8, §302.11d]

A pending permit action or notification of anticipated non-compliance does not stay any permit condition. [District Rule 3.8, §302.11e]

Within a reasonable time period, the Permit Holder shall furnish any information requested by the APCO, in writing, for the purpose of determining:

- a. Compliance with the permit; or
- b. Whether or not cause exists for a permit or enforcement action. [District Rule 3.8, §302.11f]

**Permit Condition -Emergency Provisions:**

Within two weeks of an emergency event, the owner or operator shall submit to the District a properly signed contemporaneous log or other relevant evidence demonstrating that:

- a. An emergency occurred;
- b. The Permit Holder can identify the cause(s) of the emergency;
- c. The facility was being properly operated at the time of the emergency;
- d. All steps were taken to minimize the emissions resulting from the emergency; and
- e. Within two working days of the emergency event, the Permit Holder provided the District with a description of the emergency and any mitigating or corrective actions taken; and

In any enforcement proceeding, the Permit Holder has the burden of proof for establishing that an emergency occurred. [District Rule 3.8, §302.12]

**Permit Condition -Severability:**

If any provision, clause, sentence, paragraph, section or part of these conditions for any reason is judged to be unconstitutional or invalid, such judgment shall not affect or invalidate the remainder of these conditions. [District Rule 3.8, §302.13]

**Compliance Certification:**

**Requirement:** Section 302.14(a) of Rule 3.8 requires "the responsible official shall submit a compliance certification to the U.S. EPA and the APCO every twelve (12) months unless required more frequently by an applicable requirement. All compliance reports and other documents required to be submitted to the District by the responsible official shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete."

**Streamlining Demonstration:** As shown in the following permit conditions, the standard annual compliance certification reporting language of Rule 3.8 (Federal Operating Permits), will be streamlined under the provisions of Rule 3.4 to include specific reporting and submittal dates:

**Permit Condition -Compliance Certification:**

The Responsible Official shall submit a compliance certification to the U.S. EPA and the APCO every twelve (12) months unless required more frequently by an applicable requirement. The twelve (12) month period will begin on January 1 and end on December 31, and will be due by January 31 for the previous reporting year, unless otherwise approved in writing by the District. All compliance reports and other documents required to be submitted to the District by the responsible official shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

The compliance certification shall identify the basis for each permit term or condition (e.g., specify the emissions limitation, standard, or work practice) and a means of monitoring compliance with the term or condition consistent with Sections 302.5, 302.6, and 302.7 of Rule 3.8. [District Rule 3.8, §302.14b]

The compliance certification shall include a statement of the compliance status, whether compliance was continuous or intermittent, and method(s) used to determine compliance for the current time period and over the entire reporting period. [District Rule 3.8, §302.14c]

The compliance certification shall include any additional inspection, monitoring, or entry requirement that may be promulgated pursuant to Sections 114(a) and 504(b) of the Federal Clean Air Act. [District Rule 3.8, §302.14d]

**Permit Condition -Permit Life:**

The Title V permit shall expire five years from the date of issuance. Title V permit expiration terminates the stationary source's right to operate unless a timely and complete Title V permit application for renewal has been submitted. [District Rule 3.8, §302.15]

**Permit Condition -Payment of Fees:**

An owner or operator shall pay the appropriate Title V permit fees on schedule. If fees are not paid on schedule, the permit is forfeited. Operation without a permit subjects the source to potential enforcement action by the District and the U.S. EPA pursuant to Section 502(a) of the CAA. [District Rule 3.8, §302.16]

**Permit Condition -Permit Revision Exemption:**

No permit revision shall be required under any approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for in the permit. [District Rule 3.8, §302.22]

**Permit Condition -Application Requirements:**

An owner or operator shall submit a standard District application for renewal of the Title V permit, no earlier than 18 months and no later than six months before the expiration date of the current permit to operate. [District Rule 3.8, §402.2]

An owner or operator shall submit a standard District application for each emissions unit affected by a proposed permit revision that qualifies as a significant Title V permit modification. The application shall be submitted after obtaining any required preconstruction permits. Upon request by the APCO, the owner or operator shall submit copies of the latest preconstruction permit for each affected emissions unit. The emissions unit(s) shall not commence operation until the APCO approves the permit revision. [District Rule 3.8, §402.3]

An owner or operator shall submit a standard District application for each emissions unit affected by the proposed permit revision that qualifies as a minor permit modification. The application shall be submitted after obtaining any required preconstruction permits. The emissions unit(s) shall not commence operation until the APCO approves the permit revision. In the application, the owner or operator shall include the following:

- a. A description of the proposed permit revision, any change in emissions, and additional applicable federal requirements that will apply;
- b. Proposed permit terms and conditions; and
- c. A certification by a responsible official that the permit revision meets criteria for use of minor permit modification procedures and a request that such procedures be used. [District Rule 3.8, §402.4]

**Permit Condition -Permit Reopening for Cause:**

Circumstances that are cause for reopening and revision of a permit include, but are not limited to, the following:

- a. The need to correct a material mistake or inaccurate statement;
- b. The need to revise or revoke a permit to operate to assure compliance with applicable federal requirements;
- c. The need to incorporate any new, revised, or additional applicable federal requirements, if the remaining authorized life of the permit is 3 years or greater, no later than 18 months after the promulgation of such requirement (where less than 3 years remain in the authorized life of the permit, the APCO shall incorporate the requirements into the permit to operate upon renewal); or
- d. Additional requirements promulgated pursuant to Title IV as they become applicable to any acid rain unit governed by the permit. [District Rule 3.8, §413.1]

**Permit Condition -Recordkeeping:**

The permit holder shall record maintenance of all monitoring and support information required by any applicable federal requirement, including:

- a. Date, place, and time of sampling;
- b. Operating conditions at the time of sampling;
- c. Date, place, and method of analysis; and
- d. Results of the analysis. [District Rule 3.8, §302.6a]

The permit holder shall retain records of all required monitoring data and support information for a period of at least five years from the date of sample collection, measurement, report, or application. [District Rule 3.8 §302.6b]

**Permit Condition -Reporting Requirements:**

Any deviation from permit requirements, including that attributable to upset conditions (as defined in the permit), shall be promptly reported to the APCO. For the purpose of this condition prompt means as soon as reasonably possible, but no later than 10 days after detection.[District Rule 3.8, §302.7a]

A semi-annual monitoring report shall be submitted at least once every six (6) consecutive calendar months and shall identify any deviation from permit requirements, including that previously reported to the APCO pursuant to Section 302.7(a) of Rule 3.8. Unless otherwise approved in writing by the District, the following shall apply:

- a. The first six (6) month monitoring period will begin on January 1 and end on June 30, and the report will be due by July 31 of the reporting year; and
- b. The second six (6) month period will begin on July 1 and end on December 31, and the report will be due on January 31 of the

following calendar year.

All reports of deviation from permit requirements shall include the probable cause of the deviation and any preventive or corrective action taken. [District Rule 3.8, §302.7c]

**District Rule 3.20-Ozone Transport Mitigation**

This emissions unit is exempt from Rule 3.4, Sections 302 and 303. Therefore, per Section 110.3 of this rule, this application is exempt from the requirements of this rule.

**Title 17 CCR Section 93115-Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines**

This state regulation requires that any new stationary emergency diesel fired engine installed after January 1, 2005 have a PM emission factor less than or equal to 0.15 g/bhp-hr. As proposed, the engine meets this requirement.

The regulation also requires that the engine comply with the following:

- The engine owner or operator will only refuel the engine with California Air Resources Board certified diesel fuel.
- The engine shall not operate more than 50 hours per year for maintenance and testing purposes.
- A non-resettable hour meter shall be installed with a minimum display capability of 9,999 hours.
- The owner or operator is required to maintain a monthly log that lists the following information: emergency hours of operation, maintenance and testing hours of operation, emission testing hours of operation, initial startup hours, and fuel use through fully documented purchase records.
- The log shall be retained for a minimum of 36 months from the date of entry. Log entries made within 24 months of the most recent entry shall be retained on site and made immediately available to the District. Log entries made from 24 to 36 months from the most recent entry shall be made available to District staff within 5 working days from the request.

**NSPS Applicability-40 CFR, Part 60, Subpart IIII, Standards of Performance For Stationary Compression Ignition Internal Combustion Engines**

This subpart sets standards for the manufacturers of specified stationary compression ignition engines and owners and operators of stationary compression ignition engines that commence construction or modify or reconstruct their engine after July 11, 2005.

**Compliance Status:** This subpart applies to manufacturers, owners and operators of specified stationary compression engines. This is an application for an emergency stationary compression engine manufactured after April 1, 2006 and is not a fire pump engine. The source is currently in compliance with the requirements of the Subpart.

**Requirement:** The engine has a displacement less than 10 liters per cylinder, therefore per §60.4205(b) the engine is subject to the emissions standards outlined in §60.4202. As demonstrated below the engine meets this requirement.

	<u>Emission Rate (g/bhp-hr)</u>	<u>Allowable Rate (g/bhp-hr)*</u>	<u>Compliance</u>
NMHC + NOx	4.10	4.8	Yes
CO	0.75	2.6	Yes
PM	0.06	0.15	Yes

\*CFR 89.112

**Streamlining Demonstration:** The Tier II standard for this engine class and category is 4.8 g/bhp-hr for VOC + NOx, 2.6 g/bhp-hr for CO and 0.15 g/bhp-hr for PM. Subpart IIII emission standards are subsumed by the federally enforceable District Rule 3.4 requirement of an EPA certified Tier II engine for P-4-13. The District Rule 3.4 requirements are equivalent to the emission standards outlined in Subpart IIII.

**Permit Condition:** An emergency internal combustion engine, Caterpillar IC engine, Model No. C27, 1,214 Brake Horsepower, to power an emergency generator [District Rule 3.4/C-13-06]

**Requirement:** In addition the subpart requires the owner/operator to comply with the following for this engine class and category:

- The engine and any control device must be maintained according to the manufacturer's instructions or procedures approved by the manufacturer (§60.4206 and §60.4211).
- The engine diesel fuel must meet the requirements of 40 CFR 80.510 for nonroad diesel fuel (§60.4207).
- The engine must be installed with a non-resettable hour meter prior to start-up (§60.4209).
- Maintenance and readiness testing is limited to 100 hours per year (§60.4211).

**Subsuming Demonstration:** The state requirements for diesel and maintenance testing are more stringent than the federal limit. Therefore, the federal requirement will be met by:

- a. The District Rule 3.4 requirement for the EPA certified Tier;
- b. The Permit Holder shall maintain the engine and control device according to the manufacturer's instructions or alternate procedures

approved by the manufacturer;

- c. The Permit Holder shall only refuel the IC engine with CARB certified diesel fuel;
- d. The Permit Holder shall install and maintain a non-resettable hour meter with a minimum display capability of 9,999 hours;
- e. The Permit Holder shall not operate this internal combustion engine more than 50 hours per calendar year for maintenance and testing purposes, and such operation shall be scheduled in cooperation with the District so as to limit air quality impact.

**Permit Condition:** The Permit Conditions satisfying these requirements are listed in Section 3.4.

**Permit Condition:** The Permit Holder shall comply with the applicable requirements of 40 CFR Part 60, Subpart IIII. [40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ]

**NSPS Applicability-40 CFR, Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines**

The provisions of this subpart apply to owners or operators of stationary reciprocating internal combustion engines at major or area sources of Hazardous Air Pollutants (HAP).

**Compliance Status:** This subpart applies to engines operating at any stationary source. This is an application for a new compression emergency engine at an area source. Engines constructed or reconstructed after June 12, 2006 meet the rule requirements by demonstrating compliance with Subpart IIII. The source is currently in compliance with the requirements of the Subpart.

**Requirement:** An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.

- (1) A new or reconstructed stationary RICE located at an area source;
- (2) A new or reconstructed 2SLB stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;
- (3) A new or reconstructed 4SLB stationary RICE with a site rating of less than 250 brake HP located at a major source of HAP emissions;
- (4) A new or reconstructed spark ignition 4 stroke rich burn (4SRB) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;
- (5) A new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis;
- (6) A new or reconstructed emergency or limited use stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions;
- (7) A new or reconstructed compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions. [40 CFR 63.6590]

**Permit Condition:** The Permit Holder shall comply with the applicable requirements of 40 CFR Part 60, Subpart IIII. [40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ]

**District Risk Management Plan and Risk Assessment Guidelines (RMPRAG)**

As required by the District's RMPRAG Policy, the project's health risk will be reviewed. The review will evaluate the Hazardous Air Pollutant (HAP) emissions, and because the engine was installed after March 3, 2004, the risk from diesel particulate will also be quantified.

**1. HAP Emissions - Excluding Diesel Particulate:**

Pollutants	Emission Factor * (lb/MMBtu)	Emissions (lb/year)	Screening Level (lb/year)	Less Than Screening
Benzene	9.33E-04	1.47	6.70	Yes
Toluene	4.09E-04	0.64	38,600.00	Yes
Xylenes	2.85E-04	0.45	57,900.00	Yes
Propylene	2.58E-03	4.05	52.00	Yes
1,3-Butadiene	3.91E-05	0.06	1.10	Yes
Formaldehyde	1.18E-03	1.85	33.00	Yes
Acetaldehyde	7.67E-04	1.20	72.00	Yes
Acrolein	9.25E-05	0.15	3.90	Yes
Benz[a]anthracene	1.68E-06	0.00	0.04	Yes
Benzo[b]fluoranthene	9.91E-08	0.00	0.04	Yes
Benzo[a]pyrene	1.55E-07	0.00	0.04	Yes
Dibenz[a,h]anthracene	5.83E-07	0.00	0.04	Yes

Indeno[1,2,3-cd]pyrene	3.57E-07	0.00	0.04	Yes
Naphthalene	8.48E-05	0.13	270.00	Yes

\* Based on AP-42, Table 3.3-2 (10/96).

Since the emissions from the above HAPs are below the screening levels, no further toxic review is required of them.

**2. Diesel Particulate Cancer Risk Calculation:**

<u>Dispersion Data</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Residential Emission Concentration, X/Q =	117.5 µg/m <sup>3</sup>	CR	Screen3
Worksite Emission Concentration, X/Q =	117.5 µg/m <sup>3</sup>	CW	Screen3

\* Conservatively, the District will use the unit's maximum dispersion concentration to evaluate both the residential and worksite receptor risks. As documented, the maximum concentration occurs at 112 meters from the source.

<u>Individual Cancer Risk (ICR)</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Diesel Particulate Unit Risk Factor =	3E-04 (unit-less)	UR	OEHHA
Dispersion Annualizing Factor *=	0.10 (unit-less)	AF	District
Residential, ICR =	1.628 in a million	ICR	ER*UR*CR*AF
Worksite, ICR =	1.070 in a million	ICW	(46/70)*ER*UR*CW*AF
Maximum, ICR =	1.628 in a million	Max Risk	Max (ICR, ICW)

\* The Screen3 dispersion concentration for both the residential and the worksite receptors are annualized by a factor of 0.10.

**3. Evaluation of Best Available Control Technology for Toxic Air Contaminants\* (T-BACT):**

Is T-BACT Required (Max Risk > 1 in a million):	Yes
Has T-BACT been proposed for the project:	Yes
Based on the T-BACT proposal and the maximum ICR value calculated, the project is:	<b>Approvable</b>

\* Effective March 3, 2004, the District determined that T-BACT for a diesel fired emergency engine is either: 1) the engine manufacturer's PM10 emission certification equal to or less than 0.15 gr/hp-hr; or 2) the use of a particulate control device (e.g. Diesel Particulate Filter (DPF), etc.) to reduce an engine's particulate matter exhaust emissions to or less than 0.15 g/bhp-hr

As proposed the project meets the requirements of the District's RMPRAG Policy, therefore no further toxics review is required.

**COMMENTS:**

The application does not trigger offset or public notice requirements.

BACT is triggered for NOx emissions. Per BACT Determination 669-1 the equipment as proposed meets the BACT requirements for this class and category of source.

As discussed above, the application also meets the T-BACT requirements for this class and category of source.

Copies of the ATC, Title V Statement of Basis Addendum/Evaluation, and proposed Title V permit changes will be mailed to the California Air Resources Board (ARB) and the United States Environmental Protection Agency (US EPA) Region IX.

**RECOMMENDATIONS:**

Submit for public and regulatory review.

Engineer: 

Date: 1/31/2013

Reviewed by: 

Date: 2/11/2013

**YOU-SOL-AIR QUALITY MANAGEMENT DISTRICT**  
 1st Gate Court, Suite 102, Down CA 95018

## New Source Review

### Quarterly Potential To Emit Determination

NSR Version 8/19/13  
 Evaluation to be used on existing permits to obtain their quarterly PTE.

Engineer: Alex Huth  
 Facility Name: University of California, Davis (UCD)  
 Location: Main UCD Campus  
 Date of Initial Quarterly PTE Determination: 04/13/1998  
 Date of Previous Quarterly PTE Determination: 12/20/2012  
 Date of Current Quarterly PTE Determination: 01/25/2013

ATC's C-13-06  
 PTO's  
 SIC Code # 8221

Process Description	Current Permits	VOC Emissions				CO Emissions				NOx Emissions				SOx Emissions				PM10 Emissions			
		QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)
Gasoline Storage & Dispensing	P-1-81(a3)	475	475	475	475	0.95	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Cooling Towers	P-101-02	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Boiler, NG Fired	P-101-03	5	5	5	5	0.01	26	26	26	26	0.06	83	53	54	54	0.11	1	1	1	1	0.00
Landfill Gas Collection & SVE	P-14-08	6,088	6,167	6,225	6,225	12.31	902	912	922	922	1.82	907	917	927	927	1.83	47	47	48	48	0.09
Boiler (2.1 MMBtu/hr)	P-16-08	25	25	26	26	0.16	90	91	92	92	0.18	132	133	135	135	0.27	3	3	3	3	0.01
Wastewater Treatment Plant (WWTP)	P-22-04(a)	78	78	78	78	0.16	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Boiler, NG Fired	P-28-03	124	63	64	127	0.19	488	238	238	477	0.71	511	268	261	522	0.78	3	1	1	3	0.00
Boilers (10)	P-3-00	43	44	44	44	0.09	664	672	679	679	1.35	791	608	608	608	1.80	5	5	5	5	0.01
Gasoline Storage & Dispensing	P-42-76(a3)	220	220	220	220	0.44	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Boilers, NG Fired	P-44-11	11	6	6	11	0.02	96	63	66	146	0.15	49	24	24	49	0.07	1	1	1	1	0.00
Boiler - Steam Generation	P-44-98	33	34	34	34	0.07	145	147	148	148	0.29	691	699	707	707	1.40	5	5	5	5	0.01
Boiler - Steam Generation	P-45-98	14	15	15	15	0.03	82	83	83	83	0.13	297	300	304	304	0.60	2	2	2	2	0.00
Boiler - Steam Generation	P-47-98	38	39	40	40	0.08	170	172	174	174	0.34	610	619	628	628	1.24	5	5	5	5	0.01
Boiler - Steam Generation	P-48-98	13	13	13	13	0.03	54	55	55	55	0.11	299	282	285	285	0.52	2	2	2	2	0.00
Boiler	P-5-00	12	12	12	12	0.02	66	66	66	66	0.14	328	328	328	328	0.65	2	2	2	2	0.00
Boiler - Natural Gas for Steam	P-52-00	24	24	24	24	0.05	190	182	154	154	0.81	602	608	615	615	1.22	3	3	3	3	0.01
Boiler	P-54-00(a)	36	36	36	36	0.07	287	290	293	293	0.58	238	238	241	241	0.49	4	4	4	4	0.01
Boiler	P-54-00(b)	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Woodworking (Silo)	P-54-86	17	17	17	17	0.03	68	63	70	71	0.14	324	328	331	331	0.66	2	2	2	2	0.00
Boilers - Natural Gas	P-55-86	13	13	13	13	0.03	69	70	71	71	0.14	330	334	338	338	0.67	2	2	2	2	0.00
Boilers - Natural Gas	P-55-90	23	24	24	24	0.05	101	102	103	103	0.20	480	485	490	490	0.97	3	3	3	3	0.01
Boiler - Steam Generation	P-63-06(a)	78	79	79	79	0.16	246	251	254	254	0.50	251	254	256	258	0.51	2	2	2	2	0.00
Boilers	P-64-03(a)	19	18	19	19	0.04	1,015	1,027	1,038	1,038	2.06	104	105	107	107	0.21	2	2	2	2	0.00
Boiler, NG Fired	P-65-03	27	27	28	28	0.05	218	221	223	223	0.44	119	121	122	122	0.24	3	3	3	3	0.01
Boilers	P-67-00(a)	28	29	29	29	0.06	433	438	443	443	0.83	518	522	527	527	1.05	3	3	3	3	0.01
Boiler #2	P-67-98	81	82	83	83	0.20	8,292	8,384	8,478	8,478	16.89	1,384	1,396	1,407	1,407	2.25	261	261	261	261	0.18
Incinerator, Vet. Lab.	P-81-80(a)	34	34	34	34	0.07	84	84	84	84	0.17	1,053	1,053	1,053	1,053	2.10	3	3	3	3	0.01
Boiler (180 MMBtu/hr)	P-83-06	1,887	1,688	1,704	1,704	3.38	1,517	1,538	1,549	1,549	3.07	2,665	2,681	2,617	2,617	5.20	283	286	288	288	0.51
Gasoline Storage & Dispensing	P-84-83(a1)	3	3	3	3	0.01	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Boiler	P-89-00	154	156	158	158	0.31	8,380	8,473	8,565	8,565	16.89	1,384	1,396	1,407	1,407	2.25	261	261	261	261	0.18
Boiler #1	P-90-00	558	565	567	567	0.63	8,179	8,261	8,350	8,350	16.74	13,687	13,697	13,807	13,807	21.83	2,801	2,801	2,801	2,801	5.55
Boiler, NG Fired	P-90-02	11	12	12	12	0.02	198	202	204	204	0.40	98	98	100	100	0.20	2	2	2	2	0.00
Boiler #2	P-91-00	558	563	567	567	0.66	8,176	8,261	8,350	8,350	16.74	13,687	13,697	13,807	13,807	21.86	2,801	2,801	2,801	2,801	5.55
Boiler, NG Fired	P-91-02	11	12	12	12	0.02	198	202	204	204	0.40	98	98	100	100	0.20	2	2	2	2	0.00
Woodworking (Physical Plant)	P-95-80(a1)	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Boiler #3	P-96-00	1,077	1,088	1,101	1,101	2.18	20,285	20,418	20,551	20,551	28.40	9,973	10,052	10,131	10,151	15.83	1,663	1,639	1,660	1,660	1.02
Paint Booth	P-98-80(a1)	1,715	1,715	1,715	1,715	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Pre-project SSPE (lb/year)		13,315	13,387	13,480	13,546	28.28	207,730	208,835	211,815	212,103	404.11	51,157	51,306	51,734	52,020	87.24	7,548	7,554	7,562	7,564	5.08
Post-project SSPE (lb/year)		13,315	13,387	13,480	13,546	28.28	207,730	208,835	211,815	212,103	404.11	51,157	51,306	51,734	52,020	87.24	7,548	7,554	7,562	7,564	5.08
Pre-project Policy 28 PTE		2	2	2	2	0.00	163	163	163	163	0.08	1,275	1,275	1,275	1,275	0.84	38	38	38	38	0.02
Post-project Policy 28 PTE		2	2	2	2	0.00	163	163	163	163	0.08	1,275	1,275	1,275	1,275	0.84	38	38	38	38	0.02
Emergency / IC Engine (440 BHP)	P-100-04(a)	282	282	282	282	0.14	748	748	748	748	0.37	3,472	3,472	3,472	3,472	1.74	45	45	45	45	0.02
Emergency / IC Engine (560 BHP)	P-101-04(a)	119	119	119	119	0.06	417	417	417	417	0.21	1,767	1,767	1,767	1,767	0.83	61	61	61	61	0.03
Emergency / IC Engine (1,200 BHP)	P-102-03	108	108	108	108	0.05	179	179	179	179	0.09	3,508	3,508	3,508	3,508	1.75	97	97	97	97	0.05
Emergency / IC Engine (643 BHP)	P-102-04(a)	84	84	84	84	0.05	880	880	880	880	0.34	3,088	3,088	3,088	3,088	1.54	52	52	52	52	0.03
Emergency / IC Engine (228 BHP)	P-103-04(a)	115	115	115	115	0.06	305	305	305	305	0.15	1,414	1,414	1,414	1,414	0.71	18	18	18	18	0.01
Emergency / IC Engine (228 BHP)	P-107-06(a)	17	17	17	17	0.01	167	167	167	167	0.08	838	838	838	838	0.32	18	18	18	18	0.01
Emergency / IC Engine (88 BHP)	P-108-01	34	34	34	34	0.02	91	91	91	91	0.05	207	207	207	207	0.10	6	6	6	6	0.00
Emergency / IC Engine (638 BHP)	P-108-08(a)	25	25	25	25	0.01	312	312	312	312	1.57	1,681	1,681	1,681	1,681	0.83	8	8	8	8	0.00
Emergency / IC Engine (88 BHP)	P-109-01	34	34	34	34	0.02	91	91	91	91	0.05	207	207	207	207	0.10	6	6	6	6	0.00
Emergency / IC Engine (111 BHP)	P-108-98(a)	5	5	5	5	0.00	682	682	682	682	0.33	363	363	363	363	0.20	0	0	0	0	0.00

P-110-95(a)	18	16	16	16	0.01	2,016	2,016	2,016	2,016	1.01	1,103	1,103	1,103	0.60	0	0	0	0	0	0	0.00	5	5	5	0.00
P-111-01	70	70	70	70	0.04	250	250	250	250	0.13	2,652	2,652	2,652	1.33	92	92	92	92	92	92	0.00	60	60	60	0.00
P-112-95(a)	2	2	2	2	0.00	284	284	284	284	0.15	175	175	175	0.09	0	0	0	0	0	0	0.00	1	1	1	0.00
P-113-95(a)	30	30	30	30	0.01	363	363	363	363	0.19	228	228	228	0.11	0	0	0	0	0	0	0.00	1	1	1	0.00
P-114-02	3	3	3	3	0.00	100	100	100	100	0.05	450	450	450	0.22	14	14	14	14	14	14	0.00	24	24	24	0.00
P-114-95(a)	5	5	5	5	0.00	595	595	595	595	0.30	354	354	354	0.18	0	0	0	0	0	0	0.00	2	2	2	0.00
P-115-03	47	47	47	47	0.02	133	133	133	133	0.07	1,897	1,897	1,897	0.97	61	61	61	61	61	61	0.03	27	27	27	0.04
P-117-03	16	16	16	16	0.01	306	306	306	306	0.15	628	628	628	0.83	0	0	0	0	0	0	0.00	1	1	1	0.00
P-117-95(a)	4	4	4	4	0.00	446	446	446	446	0.27	285	285	285	0.13	0	0	0	0	0	0	0.00	1	1	1	0.00
P-118-03	10	10	10	10	0.01	46	46	46	46	0.04	1,891	1,891	1,891	0.85	62	62	62	62	62	62	0.03	8	8	8	0.00
P-118-95(a)	3	3	3	3	0.00	383	383	383	383	0.19	228	228	228	0.11	0	0	0	0	0	0	0.00	1	1	1	0.00
P-119-95(a)	16	16	16	16	0.01	306	306	306	306	0.15	628	628	628	0.83	0	0	0	0	0	0	0.00	1	1	1	0.00
P-120-01	74	74	74	74	0.04	435	435	435	435	0.22	259	259	259	0.59	0	0	0	0	0	0	0.00	1	1	1	0.00
P-120-03	324	324	324	324	0.16	647	647	647	647	0.44	7,765	7,765	7,765	3.63	237	237	237	237	237	237	0.12	130	130	130	0.06
P-121-03	75	75	75	75	0.04	212	212	212	212	0.11	2,044	2,044	2,044	1.02	91	91	91	91	91	91	0.00	1	1	1	0.00
P-121-95(a)	3	3	3	3	0.00	363	363	363	363	0.19	228	228	228	0.11	0	0	0	0	0	0	0.00	1	1	1	0.00
P-122-95(a)	10	10	10	10	0.00	450	450	450	450	0.23	267	267	267	0.13	0	0	0	0	0	0	0.00	1	1	1	0.00
P-124-95(a)	8	8	8	8	0.00	1,049	1,049	1,049	1,049	0.52	623	623	623	0.31	0	0	0	0	0	0	0.00	3	3	3	0.00
P-126-95(a)	80	80	80	80	0.04	163	163	163	163	0.08	529	529	529	0.26	0	0	0	0	0	0	0.00	3	3	3	0.00
P-15-04	128	128	128	128	0.06	316	316	316	316	0.10	1,558	1,558	1,558	0.78	31	31	31	31	31	31	0.02	84	84	84	0.04
P-15-08	84	84	84	84	0.04	275	275	275	275	0.14	1,558	1,558	1,558	0.78	91	91	91	91	91	91	0.05	25	25	25	0.01
P-16-08	53	53	53	53	0.03	330	330	330	330	0.17	1,758	1,758	1,758	0.83	2	2	2	2	2	2	0.00	26	26	26	0.01
P-17-02	75	75	75	75	0.04	637	637	637	637	0.32	517	517	517	0.26	0	0	0	0	0	0	0.00	30	30	30	0.04
P-17-09	6	6	6	6	0.00	48	48	48	48	0.02	398	398	398	0.19	1	1	1	1	1	1	0.00	5	5	5	0.00
P-17-98	49	49	49	49	0.02	80	80	80	80	0.04	390	390	390	0.19	6	6	6	6	6	6	0.00	20	20	20	0.01
P-17-98	20	20	20	20	0.01	617	617	617	617	0.31	2,002	2,002	2,002	1.00	283	283	283	283	283	283	0.14	166	166	166	0.06
P-2-00	2	2	2	2	0.00	31	31	31	31	0.02	121	121	121	0.06	0	0	0	0	0	0	0.00	4	4	4	0.00
P-209-95(a)	64	64	64	64	0.03	183	183	183	183	0.09	2,414	2,414	2,414	1.21	17	17	17	17	17	17	0.01	23	23	23	0.01
P-28-95(a)	168	168	168	168	0.10	521	521	521	521	0.26	2,414	2,414	2,414	1.21	32	32	32	32	32	32	0.02	88	88	88	0.04
P-3-08	340	340	340	340	0.17	679	679	679	679	0.84	148	148	148	0.07	20	20	20	20	20	20	0.00	15	15	15	0.01
P-31-88	73	73	73	73	0.04	354	354	354	354	0.18	1,323	1,323	1,323	0.66	139	139	139	139	139	139	0.07	45	45	45	0.02
P-32-98	64	64	64	64	0.04	354	354	354	354	0.15	1,150	1,150	1,150	0.58	121	121	121	121	121	121	0.06	39	39	39	0.02
P-32-99	73	73	73	73	0.03	307	307	307	307	0.15	1,322	1,322	1,322	0.66	139	139	139	139	139	139	0.07	45	45	45	0.02
P-38-05	20	20	20	20	0.00	66	66	66	66	0.16	512	512	512	0.22	1	1	1	1	1	1	0.00	13	13	13	0.01
P-4-09	16	16	16	16	0.01	131	131	131	131	0.07	431	431	431	0.22	1	1	1	1	1	1	0.00	8	8	8	0.00
P-42-10	7	7	7	7	0.00	60	60	60	60	0.03	378	378	378	0.19	1	1	1	1	1	1	0.00	8	8	8	0.00
P-43-10	2	2	2	2	0.00	43	43	43	43	0.02	6	6	6	0.00	2	2	2	2	2	2	0.00	2	2	2	0.00
P-48-10	87	87	87	87	0.04	383	383	383	383	0.18	1,730	1,730	1,730	0.87	2	2	2	2	2	2	0.00	24	24	24	0.01
P-48-07	20	20	20	20	0.01	171	171	171	171	0.08	1,656	1,656	1,656	0.83	2	2	2	2	2	2	0.00	21	21	21	0.01
P-50-07	85	85	85	85	0.04	343	343	343	343	0.17	2,630	2,630	2,630	1.37	4	4	4	4	4	4	0.00	54	54	54	0.03
P-50-98(a)	59	59	59	59	0.03	158	158	158	158	0.08	732	732	732	0.37	10	10	10	10	10	10	0.00	52	52	52	0.03
P-51-07	10	10	10	10	0.01	31	31	31	31	0.02	131	131	131	0.07	0	0	0	0	0	0	0.00	3	3	3	0.00
P-51-98(a)	59	59	59	59	0.03	158	158	158	158	0.08	732	732	732	0.37	10	10	10	10	10	10	0.00	52	52	52	0.03
P-52-07	213	213	213	213	0.11	319	319	319	319	0.16	2,714	2,714	2,714	1.36	3	3	3	3	3	3	0.00	80	80	80	0.04
P-52-98(a)	58	58	58	58	0.03	158	158	158	158	0.08	732	732	732	0.37	10	10	10	10	10	10	0.00	52	52	52	0.03
P-53-07	213	213	213	213	0.11	319	319	319	319	0.16	2,714	2,714	2,714	1.36	3	3	3	3	3	3	0.00	80	80	80	0.04
P-54-09	21	21	21	21	0.01	165	165	165	165	0.08	1,645	1,645	1,645	0.82	2	2	2	2	2	2	0.00	21	21	21	0.01
P-50-05	12	12	12	12	0.01	48	48	48	48	0.02	275	275	275	0.14	1	1	1	1	1	1	0.00	24	24	24	0.01
P-61-00	55	55	55	55	0.03	384	384	384	384	0.19	429	429	429	0.21	1	1	1	1	1	1	0.00	418	418	418	0.21
P-63-03	8	8	8	8	0.00	1,368	1,368	1,368	1,368	0.63	76	76	76	0.04	11	11	11	11	11	11	0.01	8	8	8	0.00
P-67-09	7	7	7	7	0.00	89	89	89	89	0.04	150	150	150	0.08	0	0	0	0	0	0	0.00	8	8	8	0.00
P-69-09	20	20	20	20	0.01	140	140	140	140	0.07	480	480	480	0.24	1	1	1	1	1	1	0.00	10	10	10	0.00
P-69-09	33	33	33	33	0.02	122	122	122	122	0.06	1,675	1,675	1,675	0.84	2	2	2	2	2	2	0.00	16	16	16	0.01
P-69-09	22	22	22	22	0.01	241	241	241	241	0.12	1,819	1,819	1,819	0.91	129	129	129	129	129	129	0.06	62	62	62	0.03
P-69-09	14	14	14	14	0.01	162	162	162	162	0.08	703	703	703	0.35	1	1	1	1	1	1	0.00	24	24	24	0.01
P-7-01	14	14	14	14	0.01	246	246	246	246	0.12	1,819	1,819	1,819	0.91	129	129	129	129	129	129	0.06	62	62	62	0.03
P-7-11	27	27	27	27	0.01	417	417	417	417	0.21	3,767	3,767	3,767	1.93	3	3	3	3	3	3	0.00	62	62	62	0.03
P-7-10	14	14	14	14	0.01	246	246	246	246	0.12	1,819	1,819	1,819	0.91	129	129	129	129	129	129	0.06	62	62	62	0.03
P-7-11	27	27	27	27	0.01	417	417	417	417	0.21	3,767	3,767	3,767	1.93	3	3	3	3	3	3	0.00	62	62	62	0.03
P-7-11	14	14	14	14	0.01	246	246	246	246	0.12	1,819	1,819	1,819	0.91	129	129	129	129	129						

Emergency IC Engine (260 BHP) Emergency IC Engine (415 BHP) Emergency IC Engine (150 BHP) Emergency IC Engine (244 BHP) Emergency IC Engine (740 BHP) Emergency IC Engine (207 BHP) Emergency IC Engine (550 BHP) Emergency IC Engine (685 BHP) Emergency IC Engine (158 BHP) Emergency IC Engine (483 BHP) Emergency IC Engine (395 BHP) Emergency IC Engine (1,214 BHP) Rule 3.2 Exempt Units Total PTE (lb/year)	VOC Emissions				CO Emissions				NOx Emissions				PM10 Emissions									
	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPV)		
145	145	145	145	145	0.07	388	388	388	388	1,528	1,792	1,792	1,792	1,792	7,168	23	23	23	23	92	0.06	
209	209	209	209	209	0.10	554	554	554	554	2,216	2,573	2,573	2,573	2,573	10,293	34	34	34	34	136	0.09	
15	15	15	15	15	0.01	177	177	177	177	708	772	772	772	772	3,084	12	12	12	12	48	0.03	
123	123	123	123	123	0.06	326	326	326	326	1,304	1,513	1,513	1,513	1,513	6,052	20	20	20	20	80	0.05	
108	108	108	108	108	0.05	783	783	783	783	3,132	3,552	3,552	3,552	3,552	14,208	60	60	60	60	240	0.16	
64	64	64	64	64	0.03	183	183	183	183	732	1,004	1,004	1,004	1,004	4,016	17	17	17	17	68	0.01	
32	32	32	32	32	0.02	211	211	211	211	844	1,004	1,004	1,004	1,004	4,016	17	17	17	17	68	0.01	
81	81	81	81	81	0.04	112	112	112	112	448	604	604	604	604	2,416	1	1	1	1	4	0.02	
7	7	7	7	7	0.00	91	91	91	91	364	420	420	420	420	1,680	2	2	2	2	8	0.00	
16	16	16	16	16	0.01	92	92	92	92	368	420	420	420	420	1,680	1	1	1	1	4	0.00	
15	15	15	15	15	0.01	119	119	119	119	476	563	563	563	563	2,252	1	1	1	1	4	0.01	
48	48	48	48	48	0.02	401	401	401	401	1,604	2,148	2,148	2,148	2,148	8,592	3	3	3	3	12	0.02	
5,700																						

SUMMARY	VOC Emissions				CO Emissions				NOx Emissions				PM10 Emissions								
	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPV)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPV)	
Pre-project SSPE (lb/year)	13,315	13,387	13,480	13,548	53,730	207,733	209,638	211,813	212,103	839,284	51,157	51,306	51,734	52,020	206,217	7,548	7,554	7,562	7,564	30,188	17,81
Post-project Policy 28 PTE	13,315	13,387	13,480	13,548	53,730	207,733	209,638	211,813	212,103	839,284	51,157	51,306	51,734	52,020	206,217	7,548	7,554	7,562	7,564	30,188	17,81
FACILITY TOTAL PTE	19,083	19,115	19,228	19,298	77,460	247,370	249,273	251,449	251,759	1,000,000	103,351	103,638	103,927	104,213	412,434	15,701	15,761	15,843	15,931	60,376	35,627

**Facility Policy 28 Post-Project Potential to Emit**

	Yearly			
	Quarter #1 (lb)	Quarter #2 (lb)	Quarter #3 (lb)	Quarter #4 (lb)
VOC	13,315	13,387	13,480	13,548
CO	207,733	209,638	211,813	212,103
NOx	51,157	51,306	51,734	52,020
SOx	7,548	7,554	7,562	7,564
PM10	10,565	10,626	10,707	10,781

**Post-Project Stationary Source Potential to Emit (SSPE)**

	Yearly	
	Annual	TPV
VOC	52,520	174,480
NOx	20,000	80,000

**Offset Thresholds**

	(lb/yr)
VOC	7,500
NOx	49,500
SOx	7,500
PM10	13,650

**Mitigation Thresholds**

	(lb/year)
VOC	20,000
NOx	20,000

**SSPE Comparison to Rule 3.20 Triggers**

	Annual			
	Actual	Threshold	Comparison	Trigger
VOC	52,520	20,000	Above	Trigger
NOx	20,000	20,000	At	Trigger

**PTe Comparison to NSR Triggers**

	Annual			
	Actual	Threshold	Comparison	Trigger
VOC	52,520	20,000	Above	Trigger
NOx	20,000	20,000	At	Trigger

COMMENTS: The following Changes were made to this PTE worksheet from the last update (12/20/2012):  
 (1) Emissions were added for C-13-06.

Engineer: AH  
 Reviewed by: Frank Verain  
 Date: 1/31/2013  
 Date: 2/11/2013

**YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT**

1947 Galileo Court, Suite 103, Davis, CA 95618

## New Source Review Last Five Year Activity

**Evaluator:** Alex Huth

**SIC Code #**

8221

**Facility Name:** UC Davis

**Date of Initial Five Year Determination:**

5/22/1998

**Date of Previous Five Year Determination:**

12/20/2012

**Date of Current Five Year Determination:**

1/25/2013

**Location:** UC Davis Main Campus

**List of Activities:** C-13-06

Equipment	Issued Permits	Date PTO Issued	ATC	Date ATC Issued	VOC (tpy)	CO (tpy)	NOx (tpy)	SOx (tpy)	PM10 (tpy)
Boilers	P-67-00(a)	4/8/2009	C-08-61	1/8/2009	0.06	0.88	1.05	0.01	0.08
GDF	P-84-93(a1)	4/8/2009	C-08-97	1/8/2009	0.00	0.00	0.00	0.00	0.00
Emergency ICE	P-2-09	4/2/2010	C-08-110	1/8/2009	0.00	0.02	0.06	0.00	0.00
Emergency ICE	P-3-09	6/18/2009	C-08-193	1/8/2009	0.17	0.34	0.07	0.01	0.01
Emergency ICE	P-4-09	4/2/2010	C-08-232(rev)	1/8/2009	0.01	0.07	0.22	0.00	0.01
Emergency ICE	P-16-09	4/2/2010	C-08-254	5/1/2009	0.03	0.17	0.88	0.00	0.01
Emergency ICE	P-17-09	3/17/2010	C-09-16	5/1/2009	0.00	0.02	0.18	0.00	0.00
GDF	P-42-76(a2)	4/1/2010	C-09-57	3/5/2009	0.44	0.00	0.00	0.00	0.00
Emergency ICE	P-66-09	5/24/2010	C-09-127	9/18/2009	0.00	0.04	0.08	0.00	0.00
Emergency ICE	P-67-09	5/24/2010	C-09-128	9/18/2009	0.00	0.05	0.10	0.00	0.00
Emergency ICE	P-68-09	5/24/2010	C-09-129	9/18/2009	0.01	0.07	0.24	0.00	0.01
Emergency ICE	P-54-09	4/2/2010	C-09-139	9/18/2009	0.01	0.08	0.82	0.00	0.01
Emergency ICE	P-69-09	9/9/2010	C-09-161	9/18/2009	0.02	0.06	0.84	0.00	0.01
Boilers	P-63-06(a)	9/24/2010	C-09-210	6/3/2010	0.16	0.50	0.51	0.00	0.04
Emergency ICE	P-42-10	4/20/2011	C-10-17	9/8/2010	0.00	0.03	0.18	0.00	0.00
Emergency ICE	P-43-10	6/1/2011	C-10-38	9/8/2010	0.00	0.02	0.00	0.00	0.00
Emergency ICE	P-44-10	4/20/2011	C-10-45	9/8/2010	0.04	0.18	0.87	0.00	0.03
Emergency ICE	P-7-11	8/2/2011	C-10-105	3/25/2011	0.01	0.08	0.35	0.00	0.01
Boiler	P-54-00(a)	8/9/2011	C-10-93	3/25/2011	0.07	0.58	0.48	0.01	0.10
Boiler	P-44-11	1/9/2012	C-11-62	8/23/2011	0.02	0.15	0.07	0.00	0.02
GDF	P-1-81(a3)	5/1/2012	C-11-80	3/5/2012	0.95	0.00	0.00	0.00	0.00
Emergency ICE	P-72-11	9/27/2012	C-11-89	3/5/2012	0.03	0.31	1.08	0.00	0.03
Emergency ICE	(P-39-12)	-	C-12-89	12/10/2012	0.02	0.11	0.30	0.00	0.02
Emergency ICE	(P-51-12)	-	C-12-125	In Process	0.04	0.06	0.41	0.00	0.00
Emergency ICE	(P-52-12)	-	C-12-126	In Process	0.00	0.05	0.10	0.00	0.00
Emergency ICE	(P-55-12)	-	C-12-129	In Process	0.01	0.05	0.28	0.00	0.01
Emergency ICE	(P-56-12)	-	C-12-130	In Process	0.01	0.06	0.22	0.00	0.01
Emergency ICE	(P-4-13)	-	C-13-06	In Process	0.02	0.20	1.07	0.00	0.02
<b>TOTAL</b>					<b>2.13</b>	<b>4.18</b>	<b>10.46</b>	<b>0.03</b>	<b>0.43</b>

**COMMENTS:** These permits are sorted by date the ATC was issued. According to Rule 3.4 Section 221, a major modification is calculated based on all creditable increases and decreases from the source over the period of five consecutive years before the application, including the calendar year of the most recent application. Therefore the applicable years are January 2008 through January 2013.

The following changes were made to this worksheet from the last update (12/20/2012):

- (1) Only active PTOs and ATC with ATC issue dates within the applicable period have been considered.
- (2) Added emissions from C-13-06.

**Engineer:**

*Alex Huth* Typed Initials  
AH

**Date:**

1/31/2013 Typed Date  
1/31/2013

**Reviewed by:**

*Frankie Theobald*

**Date:**

2/11/2013

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

C-13-06 University of California, Davis

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT  
EMISSION RATE (G/S) = 1.00000  
STACK HEIGHT (M) = 3.6576  
STK INSIDE DIAM (M) = 0.2012  
STK EXIT VELOCITY (M/S) = 89.2997  
STK GAS EXIT TEMP (K) = 784.5389  
AMBIENT AIR TEMP (K) = 293.1500  
RECEPTOR HEIGHT (M) = 0.0000  
URBAN/RURAL OPTION = RURAL  
BUILDING HEIGHT (M) = 0.0000  
MIN HORIZ BLDG DIM (M) = 0.0000  
MAX HORIZ BLDG DIM (M) = 0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 5.551 M\*\*4/S\*\*3; MOM. FLUX = 30.156 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	81.14	2.64	2.62	NO
100.	114.9	4	20.0	20.0	6400.0	7.53	8.25	4.73	NO
200.	99.21	4	10.0	10.0	3200.0	11.41	15.72	8.78	NO
300.	78.96	4	8.0	8.0	2560.0	13.34	22.78	12.41	NO
400.	65.07	4	5.0	5.0	1600.0	19.15	29.79	15.90	NO
500.	55.78	4	4.5	4.5	1440.0	20.88	36.48	18.95	NO
600.	48.54	4	4.0	4.0	1280.0	23.03	43.07	21.92	NO
700.	43.06	4	3.5	3.5	1120.0	25.79	49.59	24.85	NO
800.	38.79	4	3.0	3.0	960.0	29.48	56.06	27.78	NO
900.	35.11	4	2.5	2.5	800.0	34.65	62.51	30.77	NO
1000.	32.39	4	2.5	2.5	800.0	34.65	68.70	33.29	NO
1100.	29.77	4	2.5	2.5	800.0	34.65	74.84	35.25	NO
1200.	27.63	4	2.0	2.0	640.0	42.40	81.20	37.75	NO
1300.	26.59	5	1.0	1.0	10000.0	56.29	66.42	29.62	NO
1400.	27.21	5	1.0	1.0	10000.0	56.29	70.83	30.68	NO
1500.	27.99	6	1.5	1.5	10000.0	41.81	50.23	21.07	NO
1600.	29.15	6	1.0	1.0	10000.0	47.34	53.47	22.55	NO
1700.	30.23	6	1.0	1.0	10000.0	47.34	56.34	23.16	NO
1800.	31.15	6	1.0	1.0	10000.0	47.34	59.20	23.77	NO
1900.	31.93	6	1.0	1.0	10000.0	47.34	62.05	24.37	NO
2000.	32.58	6	1.0	1.0	10000.0	47.34	64.89	24.97	NO
2100.	32.84	6	1.0	1.0	10000.0	47.34	67.72	25.48	NO
2200.	33.02	6	1.0	1.0	10000.0	47.34	70.54	25.97	NO
2300.	33.12	6	1.0	1.0	10000.0	47.34	73.35	26.47	NO
2400.	33.17	6	1.0	1.0	10000.0	47.34	76.15	26.95	NO

C1306.OUT.TXT									
2500.	33.16	6	1.0	1.0	10000.0	47.34	78.94	27.43	NO
2600.	33.10	6	1.0	1.0	10000.0	47.34	81.72	27.90	NO
2700.	33.00	6	1.0	1.0	10000.0	47.34	84.50	28.36	NO
2800.	32.85	6	1.0	1.0	10000.0	47.34	87.26	28.82	NO
2900.	32.68	6	1.0	1.0	10000.0	47.34	90.02	29.28	NO
3000.	32.48	6	1.0	1.0	10000.0	47.34	92.77	29.72	NO
3500.	30.78	6	1.0	1.0	10000.0	47.34	106.39	31.55	NO
4000.	29.02	6	1.0	1.0	10000.0	47.34	119.82	33.27	NO
4500.	27.30	6	1.0	1.0	10000.0	47.34	133.09	34.88	NO
5000.	25.68	6	1.0	1.0	10000.0	47.34	146.20	36.41	NO
5500.	24.18	6	1.0	1.0	10000.0	47.34	159.18	37.87	NO
6000.	22.79	6	1.0	1.0	10000.0	47.34	172.03	39.27	NO
6500.	21.51	6	1.0	1.0	10000.0	47.34	184.76	40.61	NO
7000.	20.33	6	1.0	1.0	10000.0	47.34	197.39	41.90	NO
7500.	19.24	6	1.0	1.0	10000.0	47.34	209.91	43.01	NO
8000.	18.25	6	1.0	1.0	10000.0	47.34	222.34	44.08	NO
8500.	17.34	6	1.0	1.0	10000.0	47.34	234.67	45.12	NO
9000.	16.51	6	1.0	1.0	10000.0	47.34	246.92	46.12	NO
9500.	15.74	6	1.0	1.0	10000.0	47.34	259.09	47.09	NO
10000.	15.04	6	1.0	1.0	10000.0	47.34	271.19	48.03	NO
15000.	10.22	6	1.0	1.0	10000.0	47.34	388.63	56.28	NO
20000.	7.677	6	1.0	1.0	10000.0	47.34	501.10	61.57	NO
25000.	6.113	6	1.0	1.0	10000.0	47.34	609.88	66.05	NO
30000.	5.057	6	1.0	1.0	10000.0	47.34	715.70	69.96	NO
40000.	3.763	6	1.0	1.0	10000.0	47.34	920.31	75.53	NO
50000.	2.985	6	1.0	1.0	10000.0	47.34	1117.49	80.17	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:  
 112. 117.5 4 20.0 20.0 6400.0 7.53 9.23 5.26 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	117.5	112.	0.

## BACT DETERMINATION 669-1

**Emission Unit:** Diesel fired emergency internal combustion (IC) engine  
**Rating:** 1,214 BHP

**Facility Name:** University of California, Davis  
**Mailing Address:** One Shields Avenue, Office of Environmental Health and Safety  
Davis, CA 95616

**Contact Name:** Aimee Pfohl, Environmental Specialist  
**Telephone:** (530) 752-4527

**Engineer:** Alex Huth  
**Date:** January 25, 2013

**Application #:** C-13-06

**I. Proposal:** The applicant is proposing to install a 1,214 BHP diesel fired emergency IC engine to power an electric generator when electrical power from the utility grid is interrupted.

**II. Applicability:** The proposed emissions for the new emergency engine are shown below.

	VOC	CO	NO <sub>x</sub> (as NO <sub>2</sub> )	SO <sub>x</sub> (as SO <sub>2</sub> )	PM <sub>10</sub>
Proposed Emissions	5.8 lb/day	48.2 lb/day	257.6 lb/day	0.4 lb/day	3.9 lb/day
Rule 3.4, Section 301.1 Triggers	10.0 lb/day	250.0 lb/day	10.0 lb/day	80.0 lb/day	80.0 lb/day

The engine is a new emissions unit and results in an increase in quarterly potential to emit for all pollutants. As shown above, BACT is not triggered for VOC, CO, SO<sub>x</sub> and PM<sub>10</sub> because the proposed emissions do not exceed the trigger levels specified by Rule 3.4, Section 301.1. BACT is triggered for NO<sub>x</sub> emissions because the proposed emissions exceed the trigger level specified by Rule 3.4, Section 301.1 and the application results in a quarterly increase in potential to emit.

**III. BACT for NO<sub>x</sub>:** Per a District Memorandum<sup>1</sup> (dated June 13, 2008), after June 30, 2008 any new emergency diesel-fired engine with a rating greater than 750 BHP must meet the NO<sub>x</sub> standards of EPA Tier II engines (effective in 2006). The applicant has provided a copy of the engine manufacturer's guarantee showing that the engine meets the Tier II standard of 4.8 g/bhp-hr for NO<sub>x</sub> + HC. Therefore, BACT is satisfied for NO<sub>x</sub>.

<sup>1</sup> BACT for Emergency Diesel Internal Combustion Engines, Engineering Section Policies and Procedures Manual.