



August 20, 2020

Michael Brandon
Yellow Pine II/Scroggs Consulting Inc
P O Box 81678
Bakersfield, CA 93380

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: S-5714
Project Number: S-1201478

Dear Mr. Brandon:

Enclosed for your review and comment is the District's analysis of Yellow Pine II/Scroggs Consulting Inc's application for an Authority to Construct for a 400 horsepower natural gas-fired IC engine powering an irrigation pump well, at Kimberlina Road and Wildwood Road in Wasco.

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

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Homero Ramirez of Permit Services at (661) 392- 5616.

Sincerely,



Arnaud Marjollet
Director of Permit Services

AM:har

Enclosures

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

Samir Sheikh
Executive Director/Air Pollution Control Officer

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Natural Gas-Fired IC Engine Powering an Irrigation Pump

Facility Name:	Yellow Pine II/Scroggs Consulting Inc	Date:	August 6, 2020
Mailing Address:	P O Box 81678 Bakersfield, CA 93380	Engineer:	Homero Ramirez
		Lead Engineer:	Richard Karrs <i>RWK Aug 12, 2020</i>
Contact Person:	Michael Brandon		
Telephone:	(661) 910-6891		
E-Mail:	mike@waterassociates.com		
Application #(s):	S-5714-6-0		
Project #:	S-1201478		
Seemed Complete:	April 28, 2020		

I. Proposal

Yellow Pine II/Scroggs Consulting Inc has requested an Authority to Construct (ATC) permit (S-5714-6-0) for the installation of a 400 bhp natural gas fired IC engine powering an irrigation well pump that will replace existing engine S-5714-4. The proposed engine was previously permitted as S-4803-5 but was purchased by the applicant and moved to its facility. A condition will be placed on the ATC requiring that the replaced engine (S-5714-4) be removed from service prior to or concurrently with the implementation of the ATC.

II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (8/15/19)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (8/15/19)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4701	Internal Combustion Engines – Phase I (8/21/03)
Rule 4702	Internal Combustion Engines (11/14/13)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)	
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines	

III. Project Location

The equipment will be located south of Kimberlina Road and east of Wildwood Road, in Wasco, CA. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

The primary function of this facility is agricultural growing of crops. The IC engine in this project powers an agricultural irrigation well pump.

V. Equipment Listing

S-5714-6-0: 400 BHP CUMMINS MODEL GTA12, SN 25212233, RICH-BURN NATURAL GAS-FIRED IC ENGINE WITH DISTRICT CERTIFIED CIC ALTRONIC INC. EPC-50 AFRC SYSTEM POWERING AN AGRICULTURAL PUMP

VI. Emission Control Technology Evaluation

All five criteria pollutants (NO_x, SO_x, PM₁₀, CO, and VOC) are emitted from natural gas-fired internal combustion engines. Various control technologies will be applied, as discussed below:

Each engine is equipped with a certified Altronic Inc. EPC-50 AFRC System for compliance with District Rule 4702 emission limits. This system consists of the following main components:

- 3-Way Catalyst (Non-Selective Catalytic Reduction)
- Air/Fuel Ratio Controller

Non-Selective Catalytic Reduction (NSCR) decreases NO_x, CO and VOC emissions by using a catalyst to promote the chemical reduction of NO_x into N₂ and O₂, and the chemical oxidation of VOC and CO into H₂O and CO₂.

The air/fuel ratio controller, (oxygen controller) is used in conjunction with the NSCR to maintain the amount of oxygen in the exhaust stream to optimize catalyst function.

VII. General Calculations

A. Assumptions

- | | |
|------------------------------------|---|
| • Fuel: | PUC-regulated natural gas |
| • EPA F-factor (adjusted to 60°F): | 8,578 dscf/MMBtu (40 CFR 60 App. B) |
| • Heating value: | 1,000 Btu/scf (District Policy APR 1720) |
| • Natural gas sulfur content: | 2.85 lb/MMscf (District Policy APR 1720) |
| • BHP to Btu/hr conversion: | 2,542.5 Btu/hp·hr |
| • Thermal efficiency of engine: | commonly ≈ 30% |
| • Ag engine load factor: | 80% (FYI 275; Annual PE only) |
| • Operating schedule: | 24 hours/day and 8,760 hours/year (applicant) |

B. Emission Factors

The Altronic Inc. EPC-50 AFRC emissions control system has received certification to meet the following Rule 4702 emissions limits for natural gas-fired rich burn IC engines located at agricultural operations:

- NO_x: 90 ppmvd @ 15% O₂,
- CO: 2,000 ppmvd @ 15% O₂,
- VOC: 250 ppmvd @ 15% O₂.

To avoid an inflated Daily Emission Limit for CO, an emission factor of 1,000 ppmvd @ 15% O₂ (equivalent to 8.49 g-CO/bhp-hr) has been utilized instead of the Rule 4702 limit of 2,000 ppmvd. The revised CO Post-Project Emission Factor (EF2) is based on source test results during the certification process as well as catalyst sizing assumptions. Furthermore, the revised EF is a more accurate estimate of the engines' potential emissions while still allowing a margin of compliance.

Additionally, the applicant proposes to lower the VOC emission limit to 50 ppmvd @15% O₂. This is proposed by the applicant and is consistent with BACT requirement and is readily achievable with the use of a 3-way catalyst. The emission factors for the engine are listed in the table below:

Emission Factors (EF)			
Pollutant	ppmv @ 15% O ₂	g/bhp-hr	Source
NO _x	90	1.3	Altronic Certification
SO _x *	--	0.011	Mass Balance Equation Below*
PM ₁₀ **	--	0.075	AP-42, Table 3.2-3 (7/00)
CO	1,000	8.49	As Discussed Above
VOC	50	0.24	As Discussed Above

*The generally excepted SO_x emission factor for PUC quality gas is 0.00285 lb-SO_x/MMBtu per District Policy APR 1720. SO_x emission factor is calculated using the mass balance equation below.

$$0.00285 \frac{\text{lb} - \text{SO}_x}{\text{MMBtu}} \times \frac{1 \text{ MMBtu}}{1,000,000 \text{ Btu}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp} - \text{hr}} \times \frac{1 \text{ bhp input}}{0.30 \text{ bhp out}} \times \frac{453.6 \text{ g}}{\text{lb}} = 0.011 \text{ g-SO}_x/\text{bhp-hr}$$

**PM₁₀ emission factor for rich-burn engine includes both filterable (9.50x10⁻³ lb/MMBtu) and condensable (9.91x10⁻³ lb/MMBtu) emissions (0.00950 + 0.00991 = 0.10941).

$$0.01941 \frac{\text{lb} - \text{PM}_{10}}{\text{MMBtu}} \times \frac{1 \text{ MMBtu}}{1,000,000 \text{ Btu}} \times \frac{2,542.5 \text{ Btu}}{\text{bhp} - \text{hr}} \times \frac{1 \text{ bhp input}}{0.30 \text{ bhp out}} \times \frac{453.6 \text{ g}}{\text{lb}} = 0.075 \text{ g-PM}_{10}/\text{bhp-hr}$$

C. Calculations

1. Pre-Project Potential to Emit (PE1)

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

2. Post-Project Potential to Emit (PE2)

Daily PE1 = (EF1, g/bhp-hr)(Engine Rating, bhp)(24 hr/day) ÷ 453.6 g/lb

Annual PE1 = (EF1, g/bhp-hr)(Engine Rating, bhp)(8,760 hr/yr)(load factor) ÷ 453.6 g/lb

Daily Post Project Emissions (PE2)					
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Daily Hours of Operation (hr/day)	Conversion (g/lb)	PE2 Total (lb/day)
NO _x	1.3	400	24	453.6	27.5
SO _x	0.011	400	24	453.6	0.2
PM ₁₀	0.075	400	24	453.6	1.6
CO	8.49	400	24	453.6	179.7
VOC	0.24	400	24	453.6	5.1

Annual Post Project Emissions (PE2)						
Pollutant	Emissions Factor (g/bhp-hr)	Rating (bhp)	Annual Hours of Operation (hr/yr)	Load Factor	Conversion (g/lb)	PE2 Total (lb/yr)
NO _x	1.3	400	8,760	0.80	453.6	8,034
SO _x	0.011	400	8,760	0.80	453.6	68
PM ₁₀	0.075	400	8,760	0.80	453.6	463
CO	8.49	400	8,760	0.80	453.6	52,467
VOC	0.24	400	8,760	0.80	453.6	1,483

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

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

SSPE1 (lb/year) ¹					
	NO _x	SO _x	PM ₁₀	CO	VOC
S-5714-1-1	2,511	21	145	16,396	2,318
S-5714-2-1	2,511	21	145	16,396	2,318
S-5714-4-1	5,021	42	290	32,793	4,635
S-5714-5-3	6,106	52	352	39,876	5,636
SSPE1	16,149	136	932	105,461	14,907

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

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

SSPE2 (lb/year)					
	NO _x	SO _x	PM ₁₀	CO	VOC
S-5714-1-1	2,511	21	145	16,396	2,318
S-5714-2-1	2,511	21	145	16,396	2,318
~~S-5714-4-1~~	0	0	0	0	0
S-5714-5-3	6,106	52	352	39,876	5,636
S-5714-6-0	8,034	68	463	52,467	1,483
SSPE2	19,162	162	1,105	125,135	11,755

5. Major Source Determination

Rule 2201 Major Source Determination:

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

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

¹ SSPE calculations are provided in Appendix E. The annual PE values have been recalculated based on an 80% agricultural engine load.

Rule 2201 Major Source Determination (lb/year)						
	NO_x	SO_x	PM₁₀	PM_{2.5}	CO	VOC
SSPE1	16,149	136	932	932	105,461	14,907
SSPE2	19,162	162	1,105	1,105	125,135	11,755
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No	No

Note: PM2.5 assumed to be equal to PM10

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

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

PSD Major Source Determination (tons/year)						
	NO₂	VOC	SO₂	CO	PM	PM₁₀
Estimated Facility PE before Project Increase	8.1	7.5	0.1	52.7	0.5	0.5
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

As shown above, the facility is not an existing PSD major source for any regulated NSR pollutant expected to be emitted at this facility.

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

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

otherwise,

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

As shown in Section VII.C.5 above, the facility is not a Major Source for any pollutant.

Therefore BE = PE1.

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 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

Since this facility is not a Major Source for any pollutants, this project does not constitute a Federal Major Modification.

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

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- NO₂ (as a primary pollutant)
- SO₂ (as a primary pollutant)
- CO
- PM
- PM₁₀

I. Project Emissions Increase - New Major Source Determination

The post-project potentials to emit from all new and modified units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

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). The PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

PSD Major Source Determination: Potential to Emit (tons/year)						
	NO ₂	VOC	SO ₂	CO	PM	PM ₁₀
Total PE from New and Modified Units	4.0	0.7	0.03	26.2	0.2	0.2
PSD Major Source threshold	250	250	250	250	250	250
New PSD Major Source?	No	No	No	No	No	No

As shown in the table above, the potential to emit for the project, by itself, does not exceed any PSD major source threshold. Therefore Rule 2410 is not applicable and no further analysis 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 F.

VIII. Compliance Determination

Rule 2020 Exemptions

This rule specifies emissions units that are not required to obtain an Authority to Construct or Permit to Operate. This rule also specifies the recordkeeping requirements to verify the exemption and outlines the compliance schedule for emissions units that lose the exemption after installation.

Per Section 6.20, agricultural sources at a stationary source that, in aggregate, produce actual emissions less than one-half of the major source thresholds, are exempt from District permit requirements. For the purposes of determining permitting applicability, fugitive emissions, except fugitive dust emissions, are included in determining aggregate emissions. This facility does not qualify for permit exemption since the VOC emissions, as calculated in Section VII.C.4 above, are greater than 10,000 lb/year (i.e., ½ the Major Source Threshold).

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,

- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

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

a. New emissions units – PE > 2 lb/day

As seen in Section VII.C.2 above, the applicant is proposing to install a new diesel-fired IC engine with a PE greater than 2 lb/day for NO_x, CO, and VOC. BACT is triggered for NO_x and VOC only since the PEs are greater than 2 lb/day. However BACT is not triggered for CO since the SSPE2 for CO is not greater than 200,000 lb/year, as demonstrated in Section VII.C.5 above.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

As discussed in Section I above, there are no modified emissions units associated with this project. Therefore BACT is not triggered.

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project does not constitute an SB 288 and/or Federal Major Modification for any pollutant. Therefore BACT is not triggered for any pollutant.

2. BACT Guideline

The BACT Guideline in Appendix B applies to AO stationary spark-ignited IC engines serving irrigation pumps.

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, 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.

Pursuant to the attached Top-Down BACT Analysis (see Appendix B), BACT has been satisfied with the following:

NO_x: 90 ppmvd @ 15% O₂
VOC: 50 ppmvd @ 15% O₂

B. Offsets

1. Offset Applicability

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Offset Determination (lb/year)					
	NO _x	SO _x	PM ₁₀	CO	VOC
SSPE2	19,162	162	1,105	125,135	11,755
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	No	No	No	No	No

2. Quantity of Offsets Required

As seen above, the SSPE2 is not greater than the offset thresholds for all the pollutants; therefore offset calculations are not necessary and offsets will not be required for this project.

C. Public Notification

1. Applicability

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

- New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
- Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- Any project which results in the offset thresholds being surpassed,
- Any project with an SSPE of greater than 20,000 lb/year for any pollutant, and/or
- Any project which results in a Title V significant permit modification

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

As demonstrated in Sections VII.C.7 and VII.C.8, this project does not constitute an SB 288 or Federal Major Modification; therefore, public noticing for SB 288 or Federal Major Modification purposes is not required.

b. PE > 100 lb/day

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. As seen in Section VII.C.2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant, therefore public noticing for PE > 100 lb/day purposes is not required.

The PE2 for this new unit is compared to the daily PE Public Notice thresholds in the following table:

PE > 100 lb/day Public Notice Thresholds			
Pollutant	PE2 (lb/day)	Public Notice Threshold	Public Notice Triggered?
NO _x	27.5	100 lb/day	No
SO _x	0.2	100 lb/day	No
PM ₁₀	1.6	100 lb/day	No
CO	179.7	100 lb/day	Yes
VOC	5.1	100 lb/day	No

Therefore, public noticing for PE > 100 lb/day purposes is required.

c. Offset Threshold

Public notification is required if the pre-project Stationary Source Potential to Emit (SSPE1) is increased to a level exceeding the offset threshold levels. The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Thresholds				
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	Offset Threshold	Public Notice Required?
NO _x	19,162	16,149	20,000 lb/year	No
SO _x	162	136	54,750 lb/year	No
PM ₁₀	1,105	932	29,200 lb/year	No
CO	125,135	105,461	200,000 lb/year	No
VOC	11,755	14,907	20,000 lb/year	No

As demonstrated above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	19,162	16,149	3,013	20,000 lb/year	No
SO _x	162	136	26	20,000 lb/year	No
PM ₁₀	1,105	932	173	20,000 lb/year	No
CO	125,135	105,461	19,674	20,000 lb/year	No
VOC	11,755	14,907	-3,152	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

e. Title V Significant Permit Modification

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

2. Public Notice Action

As discussed above, public noticing is required for this project for CO emissions in excess of 100 lb/day. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be electronically published on the District's website prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

Proposed Rule 2201 (DEL) Conditions:

- {4872} NO_x emissions from this IC engine shall not exceed 90 ppmvd-NO_x @ 15% O₂ (equivalent to 1.3 g-NO_x/bhp-hr). [District Rules 2201 and 4702]
- PM₁₀ emissions from this IC engine shall not exceed 0.075 g-PM₁₀/bhp-hr. [District Rule 2201]

- Emissions from this IC engine shall not exceed any of the following limits: 1,000 ppmvd CO @ 15% O₂ (equivalent to 8.49 g-CO/bhp-hr) or 50 ppmvd-VOC @ 15% O₂ (equivalent to 0.24 g-VOC/bhp-hr). [District Rules 2201 and 4702]
- {4863} This IC engine shall be fired on Public Utility Commission (PUC) regulated natural gas only. [District Rules 4702 and 4801]

E. Compliance Assurance

1. Source Testing

No source testing is required to demonstrate compliance with Rule 2201. Source testing provisions for ag engines are addressed in the Rule 4702 compliance discussion section of this evaluation.

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201. The permittee will be required to comply with the recordkeeping requirements of Rule 4702 as applicable for each engine in this project. See Section VIII, Rule 4702 for a discussion of the monitoring requirements for these units.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following conditions require the keeping of records to demonstrate compliance:

- {4960} The pre-catalyst exhaust temperature shall be monitored and recorded at least once in each calendar month that the engine operates. If the pre-catalyst exhaust temperature is not between the manufacturer's recommended range of 750 °F and 1,250 °F, the Altronic Inc. EPC-50 AFRC System shall be calibrated or repaired, as necessary. [District Rule 4702]
- The operator shall maintain engine operating log records of: 1) the monthly engine hour meter reading; 2) the date and the engine hour meter reading at each oxygen sensor change, MAP sensor change, and thermocouples change; 3) the monthly pre-catalyst exhaust temperatures monitoring data; 4) the date and engine hour meter reading of each catalyst module inspection, washing, and replacement; and 5) fuel purchase records. [District Rule 4702]
- {3497} 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]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

Section 4.14 of District Rule 2201 requires that an AAQA be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to Appendix D of this document for the AAQA summary sheet.

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

The proposed location is in a non-attainment area for the state's PM₁₀ as well as federal and state PM_{2.5} thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM₁₀ and PM_{2.5}.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

Since this facility's potential emissions do 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)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR) and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60.

40 CFR Part 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60.

The requirements of 40 CFR Part 60, Subpart JJJJ (Standards of Performance for Stationary Spark Ignited Internal Combustion Engines) covers stationary engines at agricultural and non-agricultural facilities.

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

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60.

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

The requirements of this subpart are applicable to stationary reciprocating internal combustion engines located at major and area sources of hazardous air pollutant (HAP) emissions. A major source of HAP emissions is a plant that emits or has the potential to emit any single HAP at a rate of 10 tons or more per year or any combination of HAP at a rate of 25 tons or more per year. An area source of HAP emissions is a source that is not a major source.

The District has not been delegated the authority to implement NESHAP regulations for area source requirements for non-Major Sources of criteria pollutants; therefore, no requirements shall be included on the permit for this proposed engine.

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 placed on the ATC:

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

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

California Health & Safety Code 41700 (Health Risk Assessment)

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

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (**Appendix D**), the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
S-5714-6	16.26	0.01	0.00	4.17E-07	No	Yes
Project Totals	16.26	0.01	0.00	4.17E-07		
Facility Totals	>1	0.01	0.00	4.17E-07		

Discussion of T-BACT

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

Rule 4201 Particulate Matter Concentration

Particulate matter emissions from the engine will be less than or equal to the rule limit of 0.1 grain per cubic foot of gas at dry standard conditions as shown by the following:

$$0.075 \frac{g - PM_{10}}{bhp - hr} \times \frac{1g - PM}{0.96g - PM_{10}} \times \frac{1bhp - hr}{2,542.5 Btu} \times \frac{10^6 Btu}{8,578 dscf} \times \frac{0.35 Btu_{out}}{1 Btu_{in}} \times \frac{15.43 grain}{g} = 0.02 \frac{grain - PM}{dscf}$$

Since 0.02 grain-PM/dscf is $\leq$ to 0.1 grain per dscf, compliance with Rule 4201 is expected.

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

Rule 4702 – Internal Combustion Engines – Phase 2

The purpose of this rule is to limit NOx, CO, and VOC emissions from internal combustion engines. This rule applies to any internal combustion engine with a rated brake horsepower greater than 50 horsepower.

Section 5.2.3 requires the owner of a spark-ignited internal combustion engine shall not operate it in such a manner that results in emissions exceeding the limits in Table 1 below for the appropriate engine type according to the compliance schedules listed in Section 7.0 or according to the compliance dates specified in Table 1 below. A spark-ignited engine shall comply with the applicable emission limits pursuant to Section 5.1 or Section 8.0.

Table 3 Emission Limits/Standards for a Spark-Ignited Internal Combustion Engine and Emission Limits/Standards and Compliance Schedule for a Spark-Ignited Engine Used Exclusively in Agricultural Operations (corrected to 15% oxygen on a dry basis)

District Rule 4702 Emission Limits			
Engine Type	NO _x	CO	VOC
1. Rich-Burn Engine Used Exclusively in Agricultural Operations			
a. Comply by 1/1/2009, or if owner has an agreement to electrify, comply by 1/1/2010	90 ppmv or 80% reduction	2000 ppmv	250 ppmv

The facility has proposed to a natural gas engine(s) with a certified Altronic Inc. EPC-50 AFRC emission control system that meets the applicable NO_x, CO and VOC limits for rich-burn engines used in exclusively agricultural operations. To ensure compliance with Section 5.2 of District Rule 4702, the following conditions will be placed on the permits:

- The Altronic Inc. EPC-50 AFRC System shall consist of an Altronic EPC50 air/fuel ratio controller, an EmeraChem EC-1200-04-S-C three-way catalyst system, two Type K thermocouples, and Zirconia exhaust gas oxygen sensor. [District Rule 4702]
- {4879} The Altronic Inc. EPC-50 AFRC System shall be installed, maintained and operated according to the component manufacturer's recommendations and shall be in place and operating at all times during engine operation. [District Rule 4702]
- {4880} A person performing installation of or maintenance specific to the Altronic Inc. EPC-50 AFRC System shall be a certified employee of Coastal Ignition & Controls or Water Associates, or work under the direct and personal supervision of an individual physically present at the work site who is certified. [District Rule 4702]
- {3404} This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702]
- {4893} This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer, Coastal Ignition & Controls (CIC), or Water Associates. [District Rule 4702]
- {4037} During periods of operation, 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]
- {4863} This IC engine shall be fired on Public Utility Commission (PUC) regulated natural gas only. [District Rules 4702 and 4801]
- {4881} The oxygen sensor shall be replaced every 2,000 hours of operation or when the EPC-50 controller indicates that an alarm code has been triggered for the sensor, whichever occurs earliest. Whenever the oxygen sensor is replaced, the Altronic Inc.

EPC-50 AFRC System shall be calibrated, prior to resuming normal engine operation, according to the procedures outlined by equipment manufacturer. [District Rule 4702]

- {4882} The catalyst module housing and elements shall be visually inspected at least once every calendar quarter. The catalyst shall be washed at least once every 8,640 hours of operation and replaced at least every 25,920 hours of operation. [District Rule 4702]
- {4883} The thermocouples shall be replaced according to the manufacturer recommendations but at least every 36,000 hours of engine operation or every 48 calendar months, whichever comes first. Whenever the thermocouples are replaced, the Altronic Inc. EPC-50 AFRC System shall be calibrated, prior to resuming normal engine operation, according to the procedures outlined by Coastal Ignition & Controls. [District Rule 4702]
- {4960} The pre-catalyst exhaust temperature shall be monitored and recorded at least once in each calendar month that the engine operates. If the pre-catalyst exhaust temperature is not between the manufacturer's recommended range of 750 °F and 1,250 °F, the Altronic Inc. EPC-50 AFRC System shall be calibrated or repaired, as necessary. [District Rule 4702]
- {4953} After the Altronic Inc. EPC-50 AFRC System is calibrated or repaired in response to the pre-catalyst temperature falling outside of the recommended range, a District-approved portable analyzer shall be used to determine that the NOx and CO emissions and O2 levels are at or below permitted levels. The pre-catalyst exhaust temperatures shall be monitored and recorded at that time and monthly monitoring of the pre-catalyst exhaust temperature shall resume as required in the previous condition. [District Rule 4702]
- {4886} Within 30 days after installation of the Altronic Inc. EPC-50 AFRC System, a District-approved portable analyzer shall be used to determine NOx and CO emissions, and O2 levels. All emission readings shall be taken with the unit operating at conditions representative of normal operations. The analyzer shall be calibrated, maintained, operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702]
- {3786} If either the NOx or CO concentrations corrected to 15% O2, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than eight (8) hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after eight (8) hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant

to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702]

- {4888} During the start-up inspection, the District shall be provided with written documentation that the emission control system is suitable for use on this engine and verify the engine's horsepower rating, exhaust flow rate, exhaust temperature, oil consumption, general mechanical condition and the available fuel supply pressure will satisfy the criteria for proper operation of the Altronic Inc. EPC-50 AFRC System, along with portable analyzer calibration records and results. [District Rule 4702]
- {4872} NO_x emissions from this IC engine shall not exceed 90 ppmvd-NO_x @ 15% O₂ (equivalent to 1.3 g-NO_x/bhp-hr). [District Rules 2201 and 4702]
- PM₁₀ emissions from this IC engine shall not exceed 0.075 g-PM₁₀/bhp-hr. [District Rule 2201]
- Emissions from this IC engine shall not exceed any of the following limits: 1,000 ppmvd CO @ 15% O₂ (equivalent to 8.49 g-CO/bhp-hr) or 50 ppmvd-VOC @ 15% O₂ (equivalent to 0.24 g-VOC/bhp-hr). [District Rules 2201 and 4702]
- The operator shall maintain engine operating log records of: 1) the monthly engine hour meter reading; 2) the date and the engine hour meter reading at each oxygen sensor change, MAP sensor change, and thermocouples change; 3) the monthly pre-catalyst exhaust temperatures monitoring data; 4) the date and engine hour meter reading of each catalyst module inspection, washing, and replacement; and 5) fuel purchase records. [District Rule 4702]
- {3497} 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]
- {4962} The District may revise and/or add requirements in the future as necessary to ensure the Altronic Inc. EPC-50 AFRC System operates according to its certification requirements. [District Rule 4702]

Section 5.3 provides requirements for continuous emissions monitoring systems (CEMS). The engine in this project is not equipped with a CEMS; therefore, this section does not apply.

Sections 5.4 and 5.5 provide requirements for engines that use percent emission reduction to comply with the NO_x emission limits of Section 5.2. The engine in this project does not use percent emission reduction to comply with the emission limits of Section 5.2; therefore, these sections do not apply.

Section 5.6 provides requirements for operators that will pay an annual fee in lieu of complying with a NO_x emission limit. As previously discussed, the engine in this project will comply with the NO_x emission limit in Section 5.2.3 of this rule; therefore, the option to pay an annual fee is not applicable.

Section 5.7 provides sulfur oxide (SO_x) emission control requirements for non-AO spark-ignited engines and non-AO compression-ignited engines. The engine in this project is used exclusively

in agricultural operations (AO); therefore, the SOx emission control requirements of this section do not apply.

Section 5.8 provides monitoring requirements for non-AO spark-ignited engines and engines in an AECP (Section 8.0). The engine in this project is used exclusively in agricultural operations (AO) and is not in an Alternate Emissions Control Plan (AECP); therefore, the monitoring requirements of this section do not apply.

Section 5.9 states that the owner of an AO spark-ignited or compression-ignited engine subject to the requirements of Section 5.2 shall:

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

Conditions that ensure compliance with the requirements of Section 5.9 were previously mentioned in Section 5.2.3. Therefore, compliance is expected and no further discussion is necessary.

Section 5.9.5 requires the owner of an agricultural spark-ignited engine that has been retrofitted with an exhaust control system that has not been certified in accordance with Section 9.0 to conduct periodic monitoring of the engine's NOx emissions using a District-approved portable emissions analyzer.

- Use a portable NOx analyzer to take NOx emission readings at least once every 24 months that the engine is operated.
- All emission readings shall be taken with the engine operating either at conditions representative of normal operations or conditions specified in the Permit-to-Operate or Permit-Exempt Equipment Registration.
- The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO.
- All NOx emissions readings shall be reported to the APCO in a manner approved by the APCO.
- NOx emission readings taken pursuant to this section shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15 consecutive-minute period.

The applicant has proposed to install an interim certified control system. Conditions that ensure compliance with the requirements of Section 5.9.5 were previously mentioned in Section 5.2.3. Therefore, compliance is expected and no further discussion is necessary.

Section 6.1 requires that the owner of an engine subject to the requirements of this rule shall submit to the APCO an emission control plan of all actions to be taken to satisfy the emission requirements of Section 5.1 and the compliance schedules of Section 7.0.

Section 6.1.3 requires that the emission control plan shall identify the type of emission control device or technique to be applied to each engine and a construction/removal schedule, or shall provide support documentation sufficient to demonstrate that the engine is in compliance with the emission requirements of this rule.

The applicant has submitted all the required information for Section 6.1 and 6.1.3 in the application for the IC engine involved with this project.

Section 6.2 requires that the owner of an engine subject to the requirements of Section 5.2 shall maintain an engine operating log to demonstrate compliance with this rule. This information shall be retained for a period of at least five years, shall be readily available, and be made available to the APCO upon request. The engine-operating log shall include, on a monthly basis, the following information:

- Total hours of operation,
- Type of fuel used,
- Maintenance or modifications performed,
- Monitoring data,
- Compliance source test results, and
- Any other information necessary to demonstrate compliance with this rule.

Section 6.2.2 requires that the data collected pursuant to the requirements of Section 5.6 shall be maintained for at least five years, shall be readily available, and made available to the APCO upon request.

Conditions that ensure compliance with the requirements of Section 6.2 and 6.2.2 were previously mentioned in Section 5.2.3. Therefore, compliance is expected and no further discussion is necessary.

Section 6.3 provides source testing requirements for an owner of an engine subject to Section 5.2 or Section 8.0. Pursuant to section 6.3.1, the following engines shall comply with the requirements of Sections 6.3.2 through 6.3.4.

- 6.3.1.1 Engines that have been retrofitted with an exhaust control device, except those certified per Section 9.0;
- 6.3.1.2 Engines subject to Section 8.0;
- 6.3.1.3 An AO spark-ignited engine that is subject to the requirements of Section 8.0;
- 6.3.1.4 An AO spark-ignited engine that has been retrofitted with a catalytic emission control and is not subject to the requirements of Section 8.0.

The applicant has proposed to install an interim certified exhaust control device and will be required to perform a portable analyzer test upon startup of the engine; no source testing is required. Therefore, the requirements of Section 6.3 are not applicable.

Section 6.4 outlines the test procedures for determining compliance with the requirements of Section 5.2. The engine in this project is subject to the requirements of Section 5.2; however, the engine is not subject to source testing, as previously discussed, since the exhaust control

system received interim certification. Therefore the requirements of this section are not applicable.

Section 6.5 requires that the owner of an engine subject to the emission limits in Section 5.2 or the requirements of Section 8.0 shall submit to the APCO for approval, an Inspection and Monitoring (I&M) plan that specifies all actions to be taken to satisfy the following requirements and the requirements of Section 5.8. Pursuant to section 6.5.1, the following engines shall comply with the requirements of Sections 6.5.2 through 6.5.9.

- 6.5.1.1 Engines that have been retrofitted with an exhaust control device, except those certified per Section 9.0;
- 6.5.1.2 Engines subject to Section 8.0;
- 6.5.1.3 An AO spark-ignited engine that is subject to the requirements of Section 8.0;
- 6.5.1.4 An AO spark-ignited engine that has been retrofitted with a catalytic emission control and is not subject to the requirements of Section 8.0.

The applicant has proposed to install an interim certified exhaust control device and is not subject to Section 8.0. Therefore, the requirements of Section 6.5 are not applicable.

Section 7.3 outlines the compliance schedule for AO compression-ignited engines. The engine in this project is a spark-ignited engine; therefore, the requirements of this section are not applicable.

Section 8.0 outlines the requirements for an Alternative Emission Control Plan (AECp). As previously discussed, the engine in this project is not subject to submitting an AECp; therefore, the requirements of this section are not applicable.

Rule 4801 Sulfur Compounds

The purpose of this rule is to limit the emissions of sulfur compounds. A maximum concentration and test method are specified. The provisions of this rule shall apply to any discharge to the atmosphere of sulfur compounds, which would exist as a liquid or a gas at standard conditions.

Section 3.1 states that a person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO₂), on a dry basis averaged over 15 consecutive minutes.

The following calculation demonstrates compliance with the concentration limit of this rule for the SO_x emissions (as SO₂) from the engines in this project.

$$\text{Volume SO}_2 = nRT/P$$

$$n = \text{moles SO}_2$$

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

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

$$2.85 \quad \frac{\text{lb} \cdot \text{SO}_2}{\text{MMscf}_{\text{gas}}} \times \frac{1 \text{ scf}_{\text{gas}}}{1,000 \text{ Btu}} \times \frac{1 \text{ MMBtu}}{8,578 \text{ scf}_{\text{exhaust}}} \times \frac{1 \text{ lb} \cdot \text{mol}}{64 \text{ lb} \cdot \text{SO}_2} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ \text{R}} \times \frac{520^\circ \text{R}}{14.7 \text{ psi}} \times 1,000,000 \text{ ppm} = 1.97 \text{ ppmv}$$

Since 1.97 ppmv is $\leq$ 2000 ppmv, this engine is expected to comply with Rule 4801.

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.

California Environmental Quality Act (CEQA)

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 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; and
- 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.

Greenhouse Gas (GHG) Significance Determination

It is determined that no other agency has prepared or will prepare an environmental review document for the project. Thus the District is the Lead Agency for this project.

On December 17, 2009, the District's Governing Board adopted a policy, APR 2005, *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*, for addressing GHG emission impacts when the District is Lead Agency under CEQA and approved the District's guidance document for use by other agencies when addressing GHG impacts as lead agencies under CEQA. Under this policy, the District's determination of significance of project-specific GHG emissions is founded on the principal that projects with GHG emission reductions consistent with AB 32 emission reduction targets are considered to have a less than significant impact on global climate change. Consistent with District Policy 2005, projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, would be determined to have a less than significant individual and cumulative impact for GHG emission.

The California Air Resources Board (ARB) adopted a Cap-and-Trade regulation as part one of the strategies identified for AB 32. This Cap-and-Trade regulation is a statewide plan, supported by a CEQA compliant environmental review document, aimed at reducing or mitigating GHG emissions from targeted industries. Facilities subject to the Cap-and-Trade regulation are subject to an industry-wide cap on overall GHG emissions. Any growth in emissions must be accounted for under that cap such that a corresponding and

equivalent reduction in emissions must occur to allow any increase. Further, the cap decreases over time, resulting in an overall decrease in GHG emissions.

Under District policy APR 2025, *CEQA Determinations of Significance for Projects Subject to ARB's GHG Cap-and-Trade Regulation*, the District finds that the Cap-and-Trade is a regulation plan approved by ARB, consistent with AB32 emission reduction targets, and supported by a CEQA compliant environmental review document. As such, consistent with District Policy 2005, projects complying with Cap-and-Trade requirements are determined to have a less than significant individual and cumulative impact for GHG emissions.

The GHG emissions increases associated with this project result from the combustion of fossil fuel(s), other than jet fuel, delivered from suppliers subject to the Cap-and-Trade regulation. Therefore, as discussed above, consistent with District Policies APR 2005 and APR 2025, the District concludes that the GHG emissions increases associated with this project would have a less than significant individual and cumulative impact on global climate change.

District CEQA Findings

The District is the Lead Agency for this project because there is no other agency with broader statutory authority over this project. The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity will occur at an existing facility and the project involves negligible expansion of the existing or former use. Furthermore, the District determined that the activity will not have a significant effect on the environment. Therefore, the District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15301 (Existing Facilities), and finds that the project is exempt per the common sense exemption that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

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. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATC S-5714-6-0 subject to the permit conditions on the attached draft ATC in Appendix A.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
S-5714-6-0	3020-10 D	400 bhp	\$577

Appendixes

- A: Draft ATC
- B: BACT Guideline and BACT Analysis
- C: BACT Cost Effectiveness Calculations
- D: HRA and AAQA Summary
- E: SSPE Calculations
- F: Quarterly Net Emissions Change

APPENDIX A

Draft ATC

***San Joaquin Valley
Air Pollution Control District***

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: S-5714-6-0

LEGAL OWNER OR OPERATOR: YELLOW PINE II/SCROGGS CONSULTING INC

MAILING ADDRESS: PO BOX 81678
BAKERSFIELD, CA 93380

LOCATION: PA-20 1/2 S OF KIMBERLINA, E OF WILDWOOD, W OF JUMPER
WASCO, CA 93280

EQUIPMENT DESCRIPTION:

400 BHP CUMMINS MODEL GTA12, SN 25212233, RICH-BURN NATURAL GAS-FIRED IC ENGINE WITH DISTRICT CERTIFIED CIC ALTRONIC INC. EPC-50 AFRC SYSTEM POWERING AN AGRICULTURAL PUMP

CONDITIONS

1. {3215} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to enter the permittee's premises where a permitted source is located or emissions related activity is conducted, or where records must be kept under condition of the permit. [District Rule 1070]
2. {3216} Upon presentation of appropriate credentials, a permittee shall allow an authorized representative of the District to have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit. [District Rule 1070]
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. {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]
5. {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
6. {4877} This IC engine shall only be used for the growing and harvesting of crops or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution. [District Rules 4701 and 4702]
7. The Altronic Inc. EPC-50 AFRC System shall consist of an Altronic EPC50 air/fuel ratio controller, an EmeraChem EC-1200-04-S-C three-way catalyst system, two Type K thermocouples, and Zirconia exhaust gas oxygen sensor . [District Rule 4702]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

S-5714-6-0 : Aug 12 2020 12:48PM -- RAMIREZH : Joint Inspection NOT Required

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8. {4879} The Altronic Inc. EPC-50 AFRC System shall be installed, maintained and operated according to the component manufacturer's recommendations and shall be in place and operating at all times during engine operation. [District Rule 4702]
9. {4880} A person performing installation of or maintenance specific to the Altronic Inc. EPC-50 AFRC System shall be a certified employee of Coastal Ignition & Controls or Water Associates, or work under the direct and personal supervision of an individual physically present at the work site who is certified. [District Rule 4702]
10. {3404} This engine shall be equipped with an operational non-resettable elapsed time meter or other APCO approved alternative. [District Rule 4702]
11. {4893} This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer, Coastal Ignition & Controls (CIC), or Water Associates. [District Rule 4702]
12. {4037} During periods of operation, 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]
13. {4863} This IC engine shall be fired on Public Utility Commission (PUC) regulated natural gas only. [District Rules 4702 and 4801]
14. {4881} The oxygen sensor shall be replaced every 2,000 hours of operation or when the EPC-50 controller indicates that an alarm code has been triggered for the sensor, whichever occurs earliest. Whenever the oxygen sensor is replaced, the Altronic Inc. EPC-50 AFRC System shall be calibrated, prior to resuming normal engine operation, according to the procedures outlined by equipment manufacturer. [District Rule 4702]
15. {4882} The catalyst module housing and elements shall be visually inspected at least once every calendar quarter. The catalyst shall be washed at least once every 8,640 hours of operation and replaced at least every 25,920 hours of operation. [District Rule 4702]
16. {4883} The thermocouples shall be replaced according to the manufacturer recommendations but at least every 36,000 hours of engine operation or every 48 calendar months, whichever comes first. Whenever the thermocouples are replaced, the Altronic Inc. EPC-50 AFRC System shall be calibrated, prior to resuming normal engine operation, according to the procedures outlined by Coastal Ignition & Controls. [District Rule 4702]
17. {4960} The pre-catalyst exhaust temperature shall be monitored and recorded at least once in each calendar month that the engine operates. If the pre-catalyst exhaust temperature is not between the manufacturer's recommended range of 750 °F and 1,250 °F, the Altronic Inc. EPC-50 AFRC System shall be calibrated or repaired, as necessary. [District Rule 4702]
18. {4953} After the Altronic Inc. EPC-50 AFRC System is calibrated or repaired in response to the pre-catalyst temperature falling outside of the recommended range, a District-approved portable analyzer shall be used to determine that the NOx and CO emissions and O2 levels are at or below permitted levels. The pre-catalyst exhaust temperatures shall be monitored and recorded at that time and monthly monitoring of the pre-catalyst exhaust temperature shall resume as required in the previous condition. [District Rule 4702]
19. {4886} Within 30 days after installation of the Altronic Inc. EPC-50 AFRC System, a District-approved portable analyzer shall be used to determine NOx and CO emissions, and O2 levels. All emission readings shall be taken with the unit operating at conditions representative of normal operations. The analyzer shall be calibrated, maintained, operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rule 4702]

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CONDITIONS CONTINUE ON NEXT PAGE

20. {3786} If either the NO_x or CO concentrations corrected to 15% O₂, as measured by the portable analyzer, exceed the allowable emission concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than eight (8) hours after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after eight (8) hours, the permittee shall notify the District within the following 1 hour, and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rule 4702]
21. {4888} During the start-up inspection, the District shall be provided with written documentation that the emission control system is suitable for use on this engine and verify the engine's horsepower rating, exhaust flow rate, exhaust temperature, oil consumption, general mechanical condition and the available fuel supply pressure will satisfy the criteria for proper operation of the Altronic Inc. EPC-50 AFRC System, along with portable analyzer calibration records and results. [District Rule 4702]
22. {4872} NO_x emissions from this IC engine shall not exceed 90 ppmvd-NO_x @ 15% O₂ (equivalent to 1.3 g-NO_x/bhp-hr). [District Rules 2201 and 4702]
23. PM₁₀ emissions from this IC engine shall not exceed 0.075 g-PM₁₀/bhp-hr. [District Rule 2201]
24. Emissions from this IC engine shall not exceed any of the following limits: 1,000 ppmvd CO @ 15% O₂ (equivalent to 8.49 g-CO/bhp-hr) or 50 ppmvd-VOC @ 15% O₂ (equivalent to 0.24 g-VOC/bhp-hr). [District Rules 2201 and 4702]
25. The operator shall maintain engine operating log records of: 1) the monthly engine hour meter reading; 2) the date and the engine hour meter reading at each oxygen sensor change, MAP sensor change, and thermocouples change; 3) the monthly pre-catalyst exhaust temperatures monitoring data; 4) the date and engine hour meter reading of each catalyst module inspection, washing, and replacement; and 5) fuel purchase records. [District Rule 4702]
26. {3497} 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]
27. {4962} The District may revise and/or add requirements in the future as necessary to ensure the Altronic Inc. EPC-50 AFRC System operates according to its certification requirements. [District Rule 4702]

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APPENDIX B
BACT Guideline and BACT Analysis

San Joaquin Valley Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline x.x.x

Emission Unit: AO Stationary Spark-Ignited IC Engines serving Irrigation Pumps **Industry Type:** Agriculture

Equipment Rating: ≤ 1,000 bhp

Last Update: September 26, 2011

Pollutant	Achieved in Practice	Technologically Feasible	Alternate Basic Equipment
VOC	50 ppmvd @ 15% O ₂ *		Electrification
NO _x	90 ppmvd @ 15% O ₂ *	5 ppmvd @ 15% O ₂ (Lean Burn Engines only)	
CO	500 ppmvd @ 15% O ₂ *		
PM ₁₀	0.063 g/bhp-hr		
SO _x	0.0094 g/bhp-hr		

*Achievable via Rich-Burn Engine w/3-way catalyst or Lean Burn Engine.

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. A cost effectiveness analysis is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

This is a Summary Page for this Class of Source

3rd Quarter 2011

Top-Down BACT Analysis for NOx Emissions

Step 1 – Identify All Possible Control Technologies

Option 1: 90 ppmvd @ 15% O₂ – Achieved in Practice

Option 2: Electrification – Alternate Basic Equipment

Step 2 – Eliminate Technologically Infeasible Options

There are no technologically infeasible options listed in Step 1 above.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Control Technology	Rank	Emissions	Technology Classification for BACT
Electrification	1	0	ABE
90 ppmvd @ 15% O ₂ *	2	90 ppmvd @ 15% O ₂ *	AIP

*Achievable via Rich-Burn Engine w/3-way catalyst or Lean Burn Engine.

Step 4 – Cost Effectiveness Analysis

As demonstrated in the cost analyses attached to the end of this analysis, electrification is not cost effective for this engine. Per District BACT Policy, since the achieved in practice option is required, no cost effective analysis will be performed for the 90 ppmvd @ 15% O₂ option.

Step 5 – Select BACT

The remaining control not eliminated in Step 4 is considered AIP BACT for this class and category of source. The applicant has proposed to install an engine with NOx emissions lower than 90 ppmvd @ 15% O₂ (equivalent to 1.3 g/bhp-hr); therefore, BACT for NOx emissions is satisfied for this engine.

Top-Down BACT and T-BACT Analysis for VOC Emissions

Step 1 – Identify All Possible Control Technologies

Option 1: 50 ppmvd @ 15% O₂– Achieved in Practice

Option 2: Electrification – Alternate Basic Equipment

Step 2 – Eliminate Technologically Infeasible Options

There are no technologically infeasible options listed in Step 1 above.

Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Control Technology	Rank	Emissions	Technology Classification for BACT
Electrification	1	0	ABE
50 ppmvd @ 15% O ₂	2	50 ppmvd @ 15% O ₂	AIP

Step 4 – Cost Effectiveness Analysis

As demonstrated in the cost analyses attached to the end of this analysis, electrification is not cost effective for this engine. Per District BACT Policy, since the achieved in practice option is required, no cost effective analysis will be performed for the 50 ppmvd @ 15% O₂ option.

Step 5 – Select BACT

50 ppmvd @ 15% O₂

The remaining control not eliminated in Step 4 is considered AIP BACT for this class and category of source. The applicant has proposed to install an engine with VOC emissions lower than 50 ppmvd @ 15% O₂; therefore, BACT for VOC emissions is satisfied for this engine.

APPENDIX C
BACT Cost Effectiveness Calculations

INFO FOR THE PROPOSED BASIC EQUIPMENT

Proposed Basic Equipment: Natural Gas-fired IC Engine

Power Rating:	400	bhp (for reference only)
Combustion Type:	Rich Burn	<= Either "Lean Burn" or "Rich Burn"
Fuel Type:	Natural Gas	<= Either "Natural Gas" or "LPG"
Operating Schedule:	8,760	hr/year
Annual Load Factor:	80%	(per FYI 275)
Brake Specific Fuel Consumption (BSFC) ¹ :	10,100	Btu/bhp-hr
Fuel Cost ² :	\$7.75	\$/1,000 scf
Fuel Higher Heating Value (HHV):	1,000	Btu/scf (APR 1720)
Thermal Efficiency of Engine:	35%	
Natural Gas IC Engine Cost ³ :	\$350	per horsepower (bhp)

MISCELLANEOUS PROJECT INFO

Capital recovery factor (10%, 10 yrs): 0.163

Convert bhp to kW: 0.7457 kW/bhp

BACT Cost Effectiveness Thresholds: (Select "Yes" or "No" below for each pollutant)

Pollutant	Is BACT Triggered?	Cost Effective Threshold, \$/ton ⁴
NOx	Yes	\$24,500
SOx	Yes	\$18,300
PM ₁₀	Yes	\$11,400
CO	Yes	\$300
VOC	Yes	\$17,500

INFO FOR BACT ALTERNATE BASIC EQUIPMENT (ABE) OPTION

ABE Option 1: Electrical Motor

Cost to Electrify ⁵ :	\$300.00	per horsepower (bhp)
Power Line Extension Distance ⁶ :	0	ft
Power Line Extension Cost ⁶ :	\$43.22	per foot (average)
Electric Rate ⁷ :	\$0.13628	per kW-hr
Daily PG&E Customer Charges ⁷ :	\$1.38	
Electric rates increase by 1.5%/yr over 10 yrs:	1.16	
Miscellaneous Costs ⁸ :	4.0%	

INFO FOR BACT TECHNOLOGICALLY FEASIBLE OPTION

Tech. Feasible Option 1: NOx - 5 ppmvd @ 15% O2 (Lean-Burn Engines Only)

SCR System Capital Cost ⁹ :	\$100,000	
Control Efficiency:	85%	
Fuel Penalty ¹⁰ :	2.50%	
Catalyst Replacement Cost ¹¹ :	\$5,000.00	per catalyst element
Catalyst Replacement Frequency ¹¹ :	1	catalyst replacement per 10 years
Reagent (Urea) Cost ¹² :	\$3.00	per gallon delivered
Reagent (Urea) Usage Rate ¹² :	0.0036	gal/bhp-hr

NOTES AND REFERENCES

1. The spark-ignition IC engine BSFC is from CAPCOA Portable IC Engine Tech. Ref. Document, http://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_SCA_m.htm
2. NG fuel costs are from the following web site:

http://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_SCA_m.htm

3. Total cost for a complete SI IC engine (w/out catalyst) on the ground and pumping water is a low-end average cost based on information gathered from Mitch Torp of TGP West (805-610-4170) and Mark Peterson, of Valley Power Systems (559-485-6900), Jan 2015
4. BACT Cost Effective Thresholds May 2008 Update [G:\Intranet_files\PER\policies\bact\may_2008_updates_to_bact_cost_effectiveness_thresholds.pdf](G:\Intranet_files\PER\policies\bact\may_2008_updates_to_bact_cost_effectiveness_thresholds.pdf)
5. Per District SI Dept., Sept 2014, using data from electrical motor installation projects which the District has helped to fund. The cost to electrify an agricultural well site is approximately \$300 per horsepower. This cost includes an electrical motor, a variable frequency drive (VFD), r/v starter, head shaft, misc. equip., tax, and labor
6. Per District SI Dept., 1/14/2015. This is the average distance and cost per foot of utility line extensions over 73 electric utility line extension projects which the District helped to fund. Use applicant/site specific information when available.
7. Electricity rate and daily customer charges are from PG&E website listed below for large Ag (35 hp+), high use (1500 hr/yr+), rate schedule 'AG-5B & AG-5E', summer peak rate. The below address links to the PG&E website and opens the most current cost information. Update this cost for each determination.
<http://www.pge.com/notes/rates/tariffs/LgAgCurrent.xls>
8. Property tax, insurance, and administrative charges (typically 4% of total capital investment annually; from OAQPS Control Cost Manual, 4th Edition, January 1990)
9. Selective Catalytic Reduction (SCR) system costs to retrofit a lean-burn spark-ignition IC engine were provided by Johnson Matthey for project S-1143086 and include catalyst element, catalyst housing, sensors, exhaust ductwork, urea injection system with urea storage tank and air compressor, installation, taxes, and freight.
10. The use of add-on controls results in additional load on the IC engine. The additional load results in higher fuel combustion of about 2.5% more fuel than an uncontrolled engine.
11. Catalyst element replacement cost and life is per Joey Mier of MurCal, 1/5/2015
12. Urea cost and usage rate is per Mark Peterson of Valley Power Systems, Nov 2014. At full power output, urea consumption would be approximately 1 gal/hr for a 322 bhp IC engine (S-11430)

COST EFFECTIVE ANALYSIS FOR AO IRRIGATION PUMP, ABE OPTION: SPARK IGNITED ENGINE VS. ELECTRICAL MOTOR

Pursuant to Section X.B of District Policy APR 1305, the cost effectiveness of ABE options is calculated using the following formula:

$$CE_{alt} = (COST_{alt} - COST_{basic}) \div (EMISSION_{basic} - EMISSION_{alt})$$

Where:

- CE_{alt} = the cost effectiveness of the alternate basic equipment expressed as dollars per ton of emissions reduced
 $COST_{alt}$ = the equivalent annual capital cost of the alternate basic equipment plus its annual operating cost
 $COST_{basic}$ = the equivalent annual capital cost of the proposed basic equipment, without BACT, plus its annual operating cost
 $EMISSION_{basic}$ = the emissions from the proposed basic equipment, without BACT
 $EMISSION_{alt}$ = the emissions from the alternate basic equipment

Calculations

Determine $COST_{alt}$:

The costs of the ABE option include the following capital and annual costs:

Capital Costs:	-Electrical motor	-Security measures ¹	-installation costs including taxes
	-Variable frequency drive (VFD)	-Utility line extension	
Annual Costs:	-Electricity	-Customer charges	
	-Miscellaneous costs		

¹ Per the District's SI Dept., an electrical motor at an agricultural well site is a remote installation and therefore susceptible to theft and vandalism. A security enclosure is a common addition for new electrical well sites to help prevent from copper wire theft. The calculation below does not include this cost due to lack of specific costs for possible security measures.

The total annualized costs for the ABE option are calculated in the following table.

Power Rating (bhp)	Annualized Capital Cost of the Motor, \$/year	Annualized Capital Cost for Line Extension, \$/year	Annual Electricity Cost, \$/year	Annual Misc. Costs, \$/year	Annual Customer Charges, \$/year	Total Capital and Annual Costs, ABE, \$/year
50	\$2,445	\$0.00	\$51,633.12	\$600.00	\$503.66	\$55,181.78
100	\$4,890	\$0.00	\$103,266.24	\$1,200.00	\$503.66	\$109,859.90
150	\$7,335	\$0.00	\$154,899.36	\$1,800.00	\$503.66	\$164,538.02
200	\$9,780	\$0.00	\$206,532.48	\$2,400.00	\$503.66	\$219,216.14
250	\$12,225	\$0.00	\$258,165.60	\$3,000.00	\$503.66	\$273,894.26
300	\$14,670	\$0.00	\$309,798.72	\$3,600.00	\$503.66	\$328,572.38
400	\$19,560	\$0.00	\$413,064.96	\$4,800.00	\$503.66	\$437,928.62
500	\$24,450	\$0.00	\$516,331.20	\$6,000.00	\$503.66	\$547,284.86
600	\$29,340	\$0.00	\$619,597.44	\$7,200.00	\$503.66	\$656,641.09

Determine $COST_{basic}$:

The cost of the proposed basic equipment includes the following capital and annual costs:

Capital Costs:	Purchase of the IC engine
Annual Costs:	Fuel costs

The total annualized costs for the proposed basic equipment are calculated in the following table:

Power Rating (bhp)	Annualized SI IC Engine Capital Cost, \$/year	Annual Fuel Cost, \$/year	Total Cost of Proposed Basic Equip, \$/year
50	\$2,853	\$27,428	\$30,280
100	\$5,705	\$54,855	\$60,560
150	\$8,558	\$82,283	\$90,840
200	\$11,410	\$109,710	\$121,120
250	\$14,263	\$137,138	\$151,400
300	\$17,115	\$164,565	\$181,680
400	\$22,820	\$219,420	\$242,240
500	\$28,525	\$274,276	\$302,801
600	\$34,230	\$329,131	\$363,361

Determine EMISSION_{basic}:

The proposed basic equipment in this project is a spark-ignition IC engine.

Per APR 1305, EMISSION_{basic} is the emissions from the proposed basic equipment, without BACT.

The emission factors in the table below are for the proposed engine, without BACT.

Category (Power Range)	NO _x EF, (g/bhp-hr)	SO _x EF, (g/bhp-hr)	PM ₁₀ EF, (g/bhp-hr)	CO EF, (g/bhp-hr)	VOC EF, (g/bhp-hr)
RB NG, 50 ≤ bhp < 100	1.3	0.0094	0.064	17.0	1.2
RB NG, 100 ≤ bhp < 500	1.0	0.0094	0.064	2.0	0.7
RB NG, bhp ≥ 500	1.0	0.0094	0.064	2.0	0.7

Determine EMISSION_{alt}:

An electrical motor is considered to result in no emissions of air contaminants (not considering power plant emissions).

Therefore, an electrical motor would result in reduction of all criteria pollutants vs. the proposed basic equipment.

Determine the Cost Effectiveness of the ABE Option

Per APR 1305, if a BACT option controls more than one type of air pollutant, calculate the Multi-Pollutant Cost Effectiveness Threshold (MCET) for the control option.

Since an electrical motor will result in no emissions for all pollutants (not including power plant emissions), the MCET will be calculated for this BACT option.

$$MCET = \Sigma(\text{Quantity of Emissions Reduced, ton/year} \times \text{Cost Effective Threshold, \$/ton})_{\text{each pollutant}}$$

The quantity of emissions reduced and the MCET are calculated in the following table for each pollutant:

Power Rating (bhp)	NO _x , ton/yr	SO _x , ton/yr	PM ₁₀ , ton/yr	CO, ton/yr	VOC, ton/yr	MCET, \$/year
50	0.50	0.00	0.02	6.57	0.46	\$22,731
100	0.77	0.01	0.05	1.54	0.54	\$29,549
150	1.16	0.01	0.07	2.32	0.81	\$44,323
200	1.54	0.01	0.10	3.09	1.08	\$59,098
250	1.93	0.02	0.12	3.86	1.35	\$73,872
300	2.32	0.02	0.15	4.63	1.62	\$88,647
400	3.09	0.03	0.20	6.18	2.16	\$118,196
500	3.86	0.04	0.25	7.72	2.70	\$147,744
600	4.63	0.04	0.30	9.27	3.24	\$177,293

Cost Effectiveness Determination

Determine whether the ABE option is cost effective:

Power Rating (bhp)	Total Capital and Annual Costs, ABE, \$/year	Total Capital and Annual Costs, Proposed Basic Equip., \$/year	Cost Difference (ABE - Basic Equipment), \$/year	MCET, \$/year	Is ABE Option Cost Effective?
50	\$55,182	\$30,280	\$24,902	\$22,731	No
100	\$109,860	\$60,560	\$49,300	\$29,549	No
150	\$164,538	\$90,840	\$73,698	\$44,323	No
200	\$219,216	\$121,120	\$98,096	\$59,098	No
250	\$273,894	\$151,400	\$122,494	\$73,872	No
300	\$328,572	\$181,680	\$146,892	\$88,647	No
400	\$437,929	\$242,240	\$195,688	\$118,196	No
500	\$547,285	\$302,801	\$244,484	\$147,744	No
600	\$656,641	\$363,361	\$293,280	\$177,293	No

COST EFFECTIVE ANALYSIS FOR STATIONARY AG IRRIGATION PUMP, TECH. FEAS. OPTION (NO_x): SCR SYSTEM

Pursuant to Section X.A of District Policy APR 1305, the cost effectiveness of technologically feasible options is the control cost per ton of air pollutant reduced. Cost effectiveness is calculated by dividing the total annual cost by the annual emission reduction for the air pollutant.

Calculations

Determine the Cost of the BACT Control Option:

The costs of the Technologically Feasible option include the following capital and annual costs:

Capital Costs:	-SCR System	-Miscellaneous Costs (installations, taxes, freight, etc.)
Annual Costs:	-Fuel Penalty	-Service/maintenance contract
	-Miscellaneous costs	-Catalyst element replacement
	-Urea (reaction agent) cost	

The total annualized costs for the technologically feasible option are calculated in the following table.

Power Rating (bhp)	Annualized Capital Cost of the SCR System, \$/year	Annual Urea Cost, \$/year	Fuel Penalty, \$/year	Annualized Catalyst Replacement Cost, \$/year	Total Capital and Annual Costs, Tech. Feas., \$/year
50	\$16,300	\$4,730.40	\$686	\$815.00	\$22,531.09
100	\$16,300	\$9,460.80	\$1,371	\$815.00	\$27,947.18
150	\$16,300	\$14,191.20	\$2,057	\$815.00	\$33,363.27
200	\$16,300	\$18,921.60	\$2,743	\$815.00	\$38,779.36
250	\$16,300	\$23,652.00	\$3,428	\$815.00	\$44,195.45
300	\$16,300	\$28,382.40	\$4,114	\$815.00	\$49,611.53
400	\$16,300	\$37,843.20	\$5,486	\$815.00	\$60,443.71
500	\$16,300	\$47,304.00	\$6,857	\$815.00	\$71,275.89
600	\$16,300	\$56,764.80	\$8,228	\$815.00	\$82,108.07

Determine Emission Reductions from the Technologically Feasible Option:

The proposed basic equipment in this project is a spark-ignition IC engine.

Emission reductions for a range of power ratings are calculated below.

Industry standard emissions are assumed to be the most stringent emission standards from any Federal, State, or Local rule or regulation.

For a new spark-ignition IC engine with a power rating of less than 100 bhp, the NO_x emission standard from District Rule 4702 is considered to be the industry standard.

For a new spark-ignition IC engine with a power rating of 100 bhp and greater, the NO_x emission standard from 40 CFR Part 60, Subpart JJJJ is considered to be the industry standard.

APPENDIX D
HRA and AAQA Summary

San Joaquin Valley Air Pollution Control District

Risk Management Review and Ambient Air Quality Analysis

To: **Homero Ramirez** – Permit Services

From: **Ye Vang** – Technical Services

Date: **July 27, 2020**

Facility Name: **YELLOW PINE II/SCROGGS CONSULTING INC**

Location: **PA-20 1/2 S OF KIMBERLINA, E OF WILDWOOD, W OF JUMPER, WASCO**

Application #(s): **S-5714-6-0**

Project #: **S-1201478**

1. Summary

1.1 RMR

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
6	16.26	0.01	0.00	4.17E-07	No	Yes
Project Totals	16.26	0.01	0.00	4.17E-07		
Facility Totals	>1	0.01	0.00	4.17E-07		

1.2 AAQA

Pollutant	Air Quality Standard (State/Federal)				
	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass ¹		Pass ¹		
NO_x	Pass ¹				Pass
SO_x	Pass ¹	Pass ¹		Pass ¹	Pass
PM10				Pass ³	Pass ³
PM2.5				Pass ⁴	Pass ⁴

Notes:

- Results were taken from the attached AAQA Report.
- The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2) unless otherwise noted below.
- Modeled PM10 concentrations were below the District SIL for non-fugitive sources of 5 µg/m³ for the 24-hour average concentration and 1 µg/m³ for the annual concentration.
- Modeled PM2.5 concentrations were below the District SIL for non-fugitive sources of 1.2 µg/m³ for the 24-hour average concentration and 0.2 µg/m³ for the annual concentration.
- The court has vacated EPA's PM2.5 SILs. Until such time as new SIL values are approved, the District will use the corresponding PM10 SILs for both PM10 and PM2.5 analyses.

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 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.

2. Project Description

Technical Services received a request on [July 27, 2020](#) to perform a [Risk Management Review \(RMR\)](#) and [Ambient Air Quality Analysis \(AAQA\)](#) for the following:

- [Unit -6-0: 400 BHP CUMMINS MODEL GTA12, SN 25212233, RICH-BURN NATURAL GAS-FIRED IC ENGINE WITH DISTRICT CERTIFIED CIC ALTRONIC INC. EPC-50 AFRC SYSTEM POWERING AN AGRICULTURAL PUMP](#)

3. RMR Report

3.1 Analysis

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

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

Then, generally no further analysis is required.

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

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

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

- [Toxic emissions for this proposed unit were calculated using 2000 AP42 emission factors for Natural Gas Fired internal combustion 4 Stroke Rich Burn Engine .](#)

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for 2007-2011 from Wasco (rural dispersion coefficient selected) to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Source Process Rates					
Unit ID	Process ID	Process Material	Process Units	Hourly Process Rate	Annual Process Rate
6	1	Natural Gas	MMscf	0.00	25.45

Point Source Parameters						
Unit ID	Unit Description	Release Height (m)	Temp. (°K)	Exit Velocity (m/sec)	Stack Diameter (m)	Vertical/ Horizontal/ Capped
6	400 BHP NG Fired IC Engine	3.66	972	81.67	0.10	Vertical

4. AAQA Report

The District modeled the impact of the proposed project on the National Ambient Air Quality Standard (NAAQS) and/or California Ambient Air Quality Standard (CAAQS) in accordance with District Policy APR-1925 (Policy for District Rule 2201 AAQA Modeling) and EPA's Guideline for Air Quality Modeling (Appendix W of 40 CFR Part 51). The District uses a progressive three level approach to perform AAQAs. The first level (Level 1) uses a very conservative approach. If this analysis indicates a likely exceedance of an AAQS or Significant Impact Level (SIL), the analysis proceeds to the second level (Level 2) which implements a more refined approach. For the 1-hour NO₂ standard, there is also a third level that can be implemented if the Level 2 analysis indicates a likely exceedance of an AAQS or SIL.

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

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

Monitoring Stations				
Pollutant	Station Name	County	City	Measurement Year
CO	Bakersfield-Muni	Kern	Bakersfield	2018
NOx	548 WALKER ST.	Kern	Shafter	2018
PM10	Bakersfield-California Avenue	Kern	Bakersfield	2018
PM2.5	BAKERSFIELD - SOUTHEAST (PLANZ)	Kern	Bakersfield	2018
SOx	Fresno - Garland	Fresno	Fresno	2018

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

Emission Rates (lbs/hour)						
Unit ID	Process	NOx	SOx	CO	PM10	PM2.5
6	1	1.14	0.01	7.49	0.07	0.07

Emission Rates (lbs/year)						
Unit ID	Process	NOx	SOx	CO	PM10	PM2.5
6	1	8,034	68.00	52,467	463	463

The AERMOD model was used to determine if emissions from the project would cause or contribute to an exceedance of any state of federal air quality standard. The parameters outlined below and meteorological data for 2007-2011 from Wasco (rural dispersion coefficient selected) were used for the analysis:

The following parameters were used for the review:

Point Source Parameters						
Unit ID	Unit Description	Release Height (m)	Temp. (°K)	Exit Velocity (m/sec)	Stack Diameter (m)	Vertical/ Horizontal/ Capped
6	400 BHP NG Fire IC Engine	3.66	972	81.67	0.10	Vertical

5. Conclusion

5.1 RMR

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

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

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

5.2 AAQA

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

6. Attachments

- A. Modeling request from the project engineer
- B. Additional information from the applicant/project engineer
- C. Prioritization score w/ toxic emissions summary
- D. Facility Summary
- E. AAQA results

APPENDIX E

SSPE Calculations

SSPE1:	Emission Factors		Load Factor	NOx g/bhp-hr	SOx g/bhp-hr	PM10 g/bhp-hr	CO g/bhp-hr	VOC g/bhp-hr
	hp	hr/yr						
S-5714-1-1	125	8760	0.8	1.3	0.011	0.075	8.49	1.2
S-5714-2-1	125	8760	0.8	1.3	0.011	0.075	8.49	1.2
S-5714-4-1	250	8760	0.8	1.3	0.011	0.075	8.49	1.2
S-5714-5-3	304	8760	0.8	1.3	0.011	0.075	8.49	1.2

Potential Emissions (lb/yr)	NOX	SOX	PM10	CO	VOC
S-5714-1-1	2,511	21	145	16,396	2,318
S-5714-2-1	2,511	21	145	16,396	2,318
S-5714-4-1	5,021	42	290	32,793	4,635
S-5714-5-3	6,106	52	352	39,876	5,636
SSPE1	16,148	137	932	105,462	14,906

SSPE2:	Emission Factors		Load Factor	NOx g/bhp-hr	SOx g/bhp-hr	PM10 g/bhp-hr	CO g/bhp-hr	VOC g/bhp-hr
	hp	hp						
S-5714-1-1	125	8760	0.8	1.3	0.011	0.075	8.49	1.2
S-5714-2-1	125	8760	0.8	1.3	0.011	0.075	8.49	1.2
~~S-5714-4-1~~	~~250~~	~~0~~	0.8	~~1.3~~	~~0.011~~	~~0.075~~	~~8.49~~	~~1.2~~
S-5714-5-3	304	8760	0.8	1.3	0.011	0.075	8.49	1.2
S-5714-6-0	400	8760	0.8	1.3	0.011	0.075	8.49	0.24

Potential Emissions (lb/yr)	NOx	SOx	PM10	CO	VOC
S-5714-1-1	2,511	21	145	16,396	2,318
S-5714-2-1	2,511	21	145	16,396	2,318
~~S-5714-4-1~~	-	-	-	-	-
S-5714-5-3	6,106	52	352	39,876	5,636
S-5714-6-0	8,034	68	464	52,468	1,483
SSPE2	19,161	162	1,105	125,137	11,754

APPENDIX F
Quarterly Net Emissions Change (QNEC)

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 values in Sections VII.C.2 and VII.C.6 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$PE2_{\text{quarterly}} = PE2_{\text{annual}} \div 4 \text{ quarters/year}$

$PE1_{\text{quarterly}} = PE1_{\text{annual}} \div 4 \text{ quarters/year}$

Quarterly NEC [QNEC]					
	PE2 (lb/yr)	PE2 (lb/qtr)	PE1 (lb/yr)	PE1 (lb/qtr)	QNEC (lb/qtr)
NO _x	8,034	2008.5	0	0	2008.5
SO _x	68	17	0	0	17
PM ₁₀	463	115.75	0	0	115.75
CO	52,467	13,116.75	0	0	13,116.75
VOC	1,483	370.75	0	0	370.75