

June 14, 2022

Mark Smith
San Joaquin Facilities Mgmt.
4520 California Ave Ste 300
Bakersfield, CA 93309

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: S-2980
Project Number: S-1210766

Dear Mr. Smith:

Enclosed for your review and comment is the District's analysis of San Joaquin Facilities Mgmt.'s application for an Authority to Construct for the installation of a 100 barrel crude oil storage tank, at SE Quarter, Section 23, Township 30S, Range 26E.

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 and 45-day EPA notice comment periods, 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. Mohamed Muthana of Permit Services at (559) 230-5839.

Sincerely,



Brian Clements
Director of Permit Services

BC:MMM

Enclosures

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

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San Joaquin Valley Air Pollution Control District

Authority to Construct Application Review

Crude Oil Storage Tank

Facility Name: San Joaquin Facilities Management, Inc. Date: June 14, 2021
Mailing Address: 4520 California Ave Ste 300 Engineer: Mohamed Muthana
Bakersfield, CA 93309 Lead Engineer: Dustin Brown
Contact Person: Mark Smith
Telephone: (661)-412-5035
E-Mail: msmith@jfmtricolor.com
Application #(s): S-2980-79-0
Project #: S-1210766
Deemed Complete: April 14, 2021

I. Proposal

San Joaquin Facilities Management, Inc. (SJFM) has requested an Authority to Construct (ATC) for the installation of a new 100 barrel (bbl) crude oil storage tank at the Canfield Ranch Oil Field. The new tank will not be connected to a vapor recovery system.

The new crude oil storage tank will result in an increase in VOC emissions and SJFM is a major source of VOC emissions, therefore this project results in a Federal Major Modification. Offsets and public noticing are required. The draft ATC is included in Appendix A.

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 2530	Federally Enforceable Potential to Emit (12/18/08)
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 4409	Components at Light Crude Oil Production facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities (04/20/05)
Rule 4623	Storage of Organic Liquids (05/19/05)
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 facility is located at the SJFM's light oil central stationary source (SE Section 23, T30S, R26E). The facility is not located within 1,000 feet of the outer boundary of any K-12 school, therefore, pursuant to CH&SC 42301.6, California Health and Safety Code (School Notice), public notification is not required.

IV. Process Description

San Joaquin Facilities Management is a facility that produces oil and gas. The 100 bbl tank will be used to collect fluids from one well during periods when the flow line for shipping crude oil to the existing tank farm is shutdown. When the flow line is returned to normal service, the fluids in this tank will be transferred to the existing tank farm and only residual fluids will be left in the tank.

V. Equipment Listing

Equipment Description:

C-2980-70-0: 100 BBL CRUDE OIL STORAGE FIXED ROOF TANK WITH P/V VENT (FRAZIER LEASE)

VI. Emission Control Technology Evaluation

The tank will be equipped with a pressure-vacuum (PV) relief vent valve set to within 10% of the maximum allowable working pressure of the tank. The PV valve will reduce VOC wind induced emissions from the tank vent.

VII. General Calculations

A. Assumptions

- Facility will operate 24 hours per day, 7 days per week, and 52 weeks per year.
- The fugitive emissions for all tanks are calculated using California Implementation Guidelines for Estimating Mass Emissions of fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/CARB, February 1999 “revised screening” emissions factors.
- Only fugitive VOCs emitted from components in gas service are calculated.
- The percentage of VOCs of the total hydrocarbons is 100%.

B. Emission Factors

Pursuant to California Implementation Guidelines for Estimating Mass Emissions of fugitive Hydrocarbon Leaks at Petroleum Facilities, CAPCOA/CARB, February 1999, emissions in this project are calculated using the “revised screening” emissions factors (see Appendix E for a calculation spreadsheets showing the emission factors used and the resulting emissions).

C. Calculations

1. Pre-Project Potential to Emit (PE1)

S-2980-79-0

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

2. Post-Project Potential to Emit (PE2)

S-2980-79-0

Post-project potential to emit is calculated based on the fugitive component counts. The potential to emit calculations are included in Appendix E. The following table summarizes the post-project potential to emit for units included in this project.

Permit Unit	VOC - Daily PE2 (lb/day)	VOC - Annual PE2 (lb/Year)
S-2980-79-0	3.0	1,097

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.

Only VOC emissions are associated with this project. Facility emissions are already above the Offset and Major Source Thresholds for VOC emissions; therefore, SSPE1 calculations are not necessary.

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.

Only VOC emissions are associated with this project. Since facility emissions are already above the Offset and Major Source Thresholds for VOC emissions, SSPE2 calculations are not necessary.

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), pursuant to the Clean Air Act, Title 3, Section 302, US Codes 7602(j) and (z)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 70.2

This source is an existing Major Source for VOC emissions and will remain a Major Source for VOC. No change in other pollutants are proposed or expected 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)						
	NO ₂	VOC	SO ₂	CO	PM	PM ₁₀
Estimated Facility PE before Project Increase*	6.9	125.5	09	26.8	0.7	0.7
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

*Estimated facility PE values were taken from Project S-1200194.

As shown above, the facility is an existing PSD major source for at least one pollutant.

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.

S-2980-32-1:

This is a clean emissions unit; therefore, BE = PE1.

S-2980-79-0:

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

7. SB 288 Major Modification

40 CFR Part 51.165 defines a SB 288 Major Modification 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 a major source for VOC, the project’s PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if further SB 288 Major Modification calculation is required.

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
NO _x	0	50,000	No
SO _x	0	80,000	No
PM ₁₀	0	30,000	No
VOC	1,097	50,000	No

Since none of the SB 288 Major Modification Thresholds are surpassed with this project, this project does not constitute an SB 288 Major Modification and no further discussion is required.

8. Federal Major Modification / New Major Source

Federal Major Modification

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

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

Since this source is not included in the 28 specific source categories specified in 40 CFR 51.165, the increases in fugitive emissions are not included in the Federal Major Modification determination.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. In step 1, emission decreases cannot cancel out the increases. Step 2 allows consideration of the project's net emissions increase as described in 40 CFR 51.165 and the Federal Clean Air Act Section 182 (e), as applicable.

Step 1: Project Emissions Increase

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project:

Emission Increase = PE2

Project Emissions Increase

Federal Major Modification Thresholds for Emission Increases			
Pollutant	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
NO _x *	0	0	No
VOC*	1,097	0	Yes
PM ₁₀	0	30,000	No
PM _{2.5}	0	20,000	No
SO _x	0	80,000	No

Since there is an increase in VOC emissions, this project constitutes a Federal Major Modification. Consequently, as discussed below in the offset section of this evaluation, pursuant to Section 7.4.2.1 of District Rule 2201, VOC Emission Reduction Credits (ERCs) used to satisfy the offset quantity required under District Rule 2201 must surplus at the time of use (ATC issuance).

Federal Offset Quantity Calculation

The Federal Offset Quantity (FOQ) is only calculated for the pollutants for which a project is a Federal Major Modification or a New Major Source as determined above.

Pursuant to 40 CFR 51.165(a)(3)(ii)(J), the federal offset quantity is the sum of the annual emission changes for all new and modified emission units in a project calculated as the potential to emit after the modification (PE2) minus the actual emissions (AE) for each emission unit times the applicable federal offset ratio.

$$FOQ = \sum(PE2 - AE) \times \text{Federal offset ratio}$$

Actual Emissions

As described in 40 CFR 51.165(a)(1)(xii), actual emissions (AE), as of a particular date, shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of normal source operation. The reviewing authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation.

Since this is a new unit, AE = 0

Federal Offset Ratio

According to the CAA 182(e), the federal offset ratio for VOC and NOx is 1.5 to 1 (due to the District extreme non-attainment status for ozone). Otherwise, the federal offset ratio for PM2.5, PM10, and SOx is 1.0 to 1.

$$FOQ = \sum(PE2 - AE)_{\text{All New and Modified Units}} \times \text{Federal offset ratio}$$

For new units, AE = 0

VOC		Federal Offset Ratio	1.5
Permit No.	Post-Project Potential to Emit (PE2) (lb/year)	Actual Emissions (lb/year)	Emissions Change (lb/yr)
S-2980-79-0	1,097	0	1,097
$\sum(PE2 - AE)$ (lb/year):			1,097
Federal Offset Quantity (lb/year): $\sum(PE2 - AE) \times 1.5$			1,646
Federal Offset Quantity (tons/year): $\sum(PE2 - AE) \times 1.5 \div 2,000$			0.82

New Major Source

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

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

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)

- VOC (as a primary pollutant)

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	0	0.55	0	0	0	0
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 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 discussed in Section VII.C.2 above, the new 100 bbl crude oil storage tank associated with this project has a PE > 2 lb/day for VOC. Therefore BACT for new emissions units with PE > 2 lb/day purposes is triggered for VOC emissions.

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 Section VII.C.8 above, this project constitutes a Federal Major Modification for VOC emissions. Therefore BACT is triggered for VOC emissions.

2. BACT Guideline

A project specific BACT analysis was performed for the proposed fixed roof crude oil storage tank. Please refer to Appendix C for the BACT analysis.

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 C), BACT has been satisfied with the following:

VOC: PV-vent set to within 10% of maximum allowable pressure

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.

As discussed in Section VII.C.4, SSPE2 calculations are not necessary. Facility emissions are already above the Offset and Major Source Thresholds for VOC.

Offset Determination (lb/year)	
	VOC
SSPE1	>20,000
Offset Thresholds	20,000
Offsets Triggered?	Yes

2. Quantity of District Offsets Required

District Offset Quantities Calculation

As demonstrated above, the facility has an SSPE1 for VOC greater than the offset thresholds. Therefore offset calculations will be required for this project.

The quantity of offsets in pounds per year for VOC is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = $(\Sigma[\text{PE2} - \text{BE}] + \text{ICCE}) \times \text{DOR}$, for all new or modified emissions units in the project,

Where,

PE2 = Post-Project Potential to Emit, (lb/year)

BE = Baseline Emissions, (lb/year)

ICCE = Increase in Cargo Carrier Emissions, (lb/year)

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

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 = HAE

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Offsets Required (lb/year) = $([\text{PE2} - \text{BE}] + \text{ICCE}) \times \text{DOR}$

PE2 (VOC) = 0 lb/year

BE (VOC) = 1,097 lb/year

ICCE = 0 lb/year

District Offsets Required (lb/year) = $([1,097 - 0] + 0) \times \text{DOR}$
= $(1,097 + 0) \times 1.5$
= 1,646 lb-VOC/year

District and Federal Offset Quantities

As discussed above, District offsets are triggered and required for VOC under NSR. In addition, as demonstrated above, this project does trigger Federal Major Modification requirements for VOC emissions.

Since District offsets and federal offsets are required, the facility must provide offset amounts equal to the greatest value between the Districts offset quantity and the federal offset quantity.

Comparison of District vs Federal VOC Offset Quantity			
	DOQ	FOQ	FOQ ≥ DOQ
VOC	1,646	1,646	Yes

As demonstrated above, the federal offset quantity required is equal to the District offset quantity. Therefore, pursuant to Section 7.4.1.2 of District Rule 2201, the facility must comply with the required federal offset quantities. In addition, emission reduction credits used to satisfy federal offset quantities for VOC must be creditable and surplus at the time of use (ATC issuance).

Calculating the appropriate quarterly emissions to be offset is as follows:

$$\begin{aligned} \text{Quarterly Offsets Required (lb/qtr)} &= (1,646 \text{ lb-VOC/year}) \div (4 \text{ quarters/year}) \\ &= 411.5 \text{ lb-VOC/qtr} \end{aligned}$$

As demonstrated in the calculation above, the quarterly amount of offsets required for this project, when evenly distributed to each quarter, results in fractional pounds of offsets being required each quarter. Since offsets are required to be withdrawn as whole pounds, the quarterly amounts of offsets need to be adjusted to ensure the quarterly values sum to the total annual amount of offsets required.

To adjust the quarterly amount of offsets required, the fractional amount of offsets required in each quarter will be summed and redistributed to each quarter based on the number of days in each quarter. The redistribution is based on the Quarter 1 having the fewest days and the Quarters 3 and 4 having the most days. The redistribution method is summarized in the following table:

Redistribution of Required Quarterly Offsets (where X is the annual amount of offsets, and $X \div 4 = Y.z$)				
Value of z	Quarter 1	Quarter 2	Quarter 3	Quarter 4
0.0	Y	Y	Y	Y
0.25	Y	Y	Y	Y+1
0.5	Y	Y	Y+1	Y+1
0.75	Y	Y+1	Y+1	Y+1

Therefore the appropriate quarterly emissions to be offset are as follows:

<u>1st Quarter</u>	<u>2nd Quarter</u>	<u>3rd Quarter</u>	<u>4th Quarter</u>	<u>Total Annual</u>
411	411	412	412	1,646

The applicant has stated that the facility plans to use ERC certificate S-4910-1 to satisfy the federal offset quantities for VOC required for this project. Pursuant to the ERC surplus analysis in Appendix H, the District has verified that the credits from the ERC certificate(s) provided by the applicant are sufficient to satisfy the federal offset quantities for VOC required for this project.

As determined in the surplus analysis of ERC certificate S-4910-1, the current quantity of surplus emission credits from this certificate satisfies the required quarterly offsets for this project.

ERC Certificate S-4910-1 – Criteria Pollutant VOC				
	1 st Qtr. (lb/qtr)	2 nd Qtr. (lb/qtr)	3 rd Qtr. (lb/qtr)	4 th Qtr. (lb/qtr)
Surplus Value	13,170	11,067	12,691	14,794

Proposed Rule 2201 Offset Permit Conditions

The following permit conditions will be added to the Authority to Construct:

- {GC# 4447 - edited} Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter – 411 lb, 2nd quarter – 411 lb, 3rd quarter – 412 lb, and fourth quarter – 412 lb. These amounts include the applicable offset ratio specified in Rule 2201, Section 4.8 (as amended 8/15/19). VOC ERCs used to satisfy the offset quantity required under District Rule 2201 must be surplus of all applicable Federal requirements at the time of issuance of this ATC and the total quantity of ERCs surrendered shall be calculated based on the ERC surplus value percent discount of each ERC certificate used. [District Rule 2201]
- {GC# 1983} ERC Certificate Number S-4910-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

C. Public Notification

1. Applicability

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

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

- b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- c. Any project which results in the offset thresholds being surpassed,
- d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant, and/or
- e. Any project which results in a Title V significant permit modification

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

As demonstrated in Sections VII.C.7 and VII.C.8, this project does trigger a Federal Major Modification. Therefore, public noticing for this project for New Major Source, Federal Major Modification, or SB 288 Major Modification purposes is 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.

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	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
VOC	> 20,000	> 20,000	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. There is no increase in overall stationary source potential emissions associated with this project. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds			
Pollutant	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	0	20,000 lb/year	No
SO _x	0	20,000 lb/year	No
PM ₁₀	0	20,000 lb/year	No
CO	0	20,000 lb/year	No
VOC	1,097	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 since the project is a Federal Major Modification. 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:

- The tank shall be equipped with a fixed roof with no holes or openings. [District Rule 2201]
- {2486} This tank shall be equipped with a pressure-vacuum (PV) relief valve set to within 10% of the maximum allowable working pressure of the tank, permanently labeled with the operating pressure settings, properly maintained in good operating order in accordance with the manufacturer's instructions, and shall remain in gas-tight condition except when the operating pressure exceeds the valve's set pressure. [District Rule 2201] N

- The monthly average daily throughput of this tank shall not exceed 50 barrels of crude oil and 100 barrels of total fluid per day. [District Rules 2201 and 4623]
- Annual throughput of this tank shall not exceed 600 barrels of crude oil and 1,200 barrels of total fluid. [District Rule 2201]
- The VOC emission rate from the tank shall not exceed 3.0 lb/day [District Rule 2201]
- The Reid Vapor Pressure (RVP) of liquids stored in this tank shall not exceed 6.0 psia. [District Rule 2201]

E. Compliance Assurance

1. Source Testing

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201.

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following condition(s) are listed on the permit to operate:

- {Modified 2497} Permittee shall maintain monthly records of average daily crude oil throughput. [District Rules 2201 and 4623] N
- {2490} All records required to be maintained by this permit shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request. [District Rule 4623]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

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 emissions exceed the major source thresholds of District Rule 2201, this facility is a major source. However, this facility has elected to comply with Rule 2530; therefore, it is exempt from the requirements of Rule 2520.

Rule 2530 Federally Enforceable Potential to Emit

The purpose of this rule is to restrict the emissions of a stationary source so that the source may elect to be exempt from the requirements of Rule 2520. Pursuant to Rule 2530, since this facility has elected exemption from the requirements of Rule 2520 by ensuring actual emissions from the stationary source in every 12-month periods to not exceed the following: ½ the major source thresholds for NO_x, VOCs, CO, and PM₁₀; 50 tons per year SO₂; 5 tons per year of a single HAP; 12.5 tons per year of any combination of HAPs; 50 percent of any lesser threshold for a single HAP as the EPA may establish by rule; and 50 percent of the major source threshold for any other regulated air pollutant not listed in Rule 2530.

Since each ATC must be a “stand alone” document, you should include this R2530 condition of the ATC.

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, Subparts K, Ka, Kb, and OOOO and could potentially apply to the proposed storage tank.

40 CFR Part 60, Subparts K, Ka, and Kb could potentially apply to the storage tanks located at this facility. However, pursuant to 40 CFR 60.110 (b), 60.110(a) (b), and 60.110(b) (b), these subparts do not apply to storage vessels less than 10,000 bbls, used for petroleum or condensate, that is stored, processed, and/or treated at a drilling and production facility prior to custody transfer. Therefore, Subparts K, Ka, and Kb do not apply to the proposed tank.

40 CFR Part 60, Subpart OOOO—Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution (constructed, reconstructed, or modified after 8/23/11) applies to single storage vessel, located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment. The proposed tank is potentially subject to this subpart. However, since the proposed tank has potential VOC emissions less than 6 tons per year, it is not an affected facility as defined in this Subpart. Therefore, Subpart OOOO has no applicable requirements.

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

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to oil field production tanks.

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.

As long as the equipment is properly maintained and operated, compliance with visible emissions limits is expected under normal operating conditions.

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.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification of an existing source shall not result in an increase in cancer risk greater than the District's significance level (20 in a million) and shall not result in acute and/or chronic risk indices greater than 1.

According to the Technical Services Memo for this project, 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 resulting prioritization score, acute hazard index, chronic hazard index, and cancer risk for this project is shown below.

Health Risk Assessment Summary	
	Worst Case Potential
Prioritization Score	0.01
Cancer Risk	3.08E-08
Acute Hazard Index	0.02
Chronic Hazard Index	0.00
T-BACT Required?	No

Rule 4409 Components at Light Crude Oil Production facilities, Natural Gas Production Facilities, and Natural Gas Processing Facilities

The purpose of this rule is to limit VOC emissions from leaking components at light crude oil production facilities, natural gas production facilities, and natural gas processing facilities, and it applies to components containing or contacting VOC streams at light crude oil production facilities, natural gas production facilities, and natural gas processing facilities.

Section 4.1 of this rule states that the requirements of this rule shall not apply to components subject to Rule 4623 (Storage of Organic Liquids). The new tank proposed is subject to Rule 4623, therefore the requirements of 4409 do not apply.

Rule 4623, Storage of Organic

This rule applies to any tank with a capacity of 1,100 gallons or greater in which any organic liquid is placed, held, or stored.

Section 4.3 states, except for complying with Sections 6.3.4 and 7.2, a small producer’s tank with a throughput of 50 barrels of crude oil per day or less is exempt from the requirements of this rule. The maximum crude oil throughput of this proposed tank is 50 barrels per day so the new tank is only subject to the requirements of Sections 6.3.4 and 7.2.

Section 6.3.4 requires small producers maintain monthly records of average daily crude oil production to determine compliance with Section 3.29. The monthly crude oil production records required by the California Division of Oil, Gas, and Geothermal Resources may be used to comply with the above requirement. Small producers shall also maintain monthly records of the average daily crude oil throughput of each tank to demonstrate compliance with Sections 4.3, and/or 5.1.2. Operators shall submit the required monthly records upon the request of the APCO.

Section 7.2 states that any tank that is exempted under Section 4.0 that becomes subject to the VOC control system requirements of this rule through the loss of exemption status, shall be in full compliance with this rule on the date the exemption status is lost.

The following condition will be included on the permit to ensure compliance with this rule:

- The monthly average daily throughput of this tank shall not exceed 50 barrels of crude oil and 100 barrels of total fluid per day. [District Rules 2201 and 4623]
- {Modified 2497} Permittee shall maintain monthly records of average daily crude oil throughput. [District Rules 2201 and 4623] N

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

District is a Responsible Agency

It is determined that another agency has prepared an environmental review document for the project. The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). As a Responsible Agency, the District is limited to mitigating or avoiding impacts for which it has statutory authority. The District does not have statutory authority for regulating greenhouse gas emissions. The District has determined that the applicant is responsible for implementing greenhouse gas mitigation measures, if any, imposed by the Lead Agency.

District CEQA Findings

The County of Kern (County) is the public agency having principal responsibility for approving the project. As such, the County served as the Lead Agency (CCR §15367). The County determined the project activities are consistent with the current allowed-use for the facility.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). The District performed an Engineering Evaluation (this document) for the proposed project and determined based upon substantial evidence that the project will not result in an increase of the facility emissions and as such there is no potential for the project to have a significant effect on air quality.

The activity will occur at an existing facility and involves negligible expansion of the existing use. Furthermore, the District determined that the activity will not have a significant effect on the environment and additionally, 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 pursuant to CEQA Guideline §15061(b)(3).

Thus, the District finds that through a combination of project design elements, compliance with applicable District rules and regulations, and compliance with District air permit conditions, project specific stationary source emissions will have a less than significant impact on air quality. The District does not have authority over any of the other project impacts and has, therefore, determined that no additional findings are required (CEQA Guidelines §15096(h)).

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-2980-79-0 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-2980-79-0	3020-05-A	4,200 gallon tank	\$91

Appendixes

- A: Draft ATC
- B: Site Map
- C: BACT Analysis
- D: HRA Summary
- E: Emission Calculations
- F: Quarterly Net Emissions Change
- G: Compliance Certification
- H: ERC Surplus Analysis
- I: ERC Withdrawal Calculations

APPENDIX A
Draft ATC

*San Joaquin Valley
Air Pollution Control District*

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: S-2980-79-0

LEGAL OWNER OR OPERATOR: SAN JOAQUIN FACILITIES MGMT
MAILING ADDRESS: 4520 CALIFORNIA AVE STE 300
BAKERSFIELD, CA 93309

LOCATION: LIGHT OIL CENTRAL STATIONARY SOURCE
CA

SECTION: SE23 **TOWNSHIP:** 30S **RANGE:** 26E

EQUIPMENT DESCRIPTION:
100 BBL CRUDE OIL STORAGE TANK WITH P/V VENT (FRAZIER LEASE)

CONDITIONS

1. ERC Certificate Number S-4910-1 (or a certificate split from this certificate) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
2. This tank shall be equipped with a pressure-vacuum (PV) relief valve set to within 10% of the maximum allowable working pressure of the tank, permanently labeled with the operating pressure settings, properly maintained in good operating order in accordance with the manufacturer's instructions, and shall remain in gas-tight condition except when the operating pressure exceeds the valve's set pressure. [District Rule 2201]
3. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 411 lb, 2nd quarter - 411 lb, 3rd quarter - 412 lb, and fourth quarter - 412 lb. These amounts include the applicable offset ratio specified in Rule 2201, Section 4.8 (as amended 8/15/19). VOC ERCs used to satisfy the offset quantity required under District Rule 2201 must be surplus of all applicable Federal requirements at the time of issuance of this ATC and the total quantity of ERCs surrendered shall be calculated based on the ERC surplus value percent discount of each ERC certificate used. [District Rule 2201] Federally Enforceable Through Title V Permit

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

Brian Clements, Director of Permit Services

S-2980-79-0 : Jun 8 2022 7:58AM -- MUTHANAM : Joint Inspection NOT Required

4. The Reid Vapor Pressure (RVP) of liquids stored in this tank shall not exceed 6.0 psia. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The VOC emission rate from the tank shall not exceed 3.0 lb/day [District Rule 2201] Federally Enforceable Through Title V Permit
6. The tank shall be equipped with a fixed roof with no holes or openings. [District Rule 2201] Federally Enforceable Through Title V Permit
7. The monthly average daily throughput of this tank shall not exceed 50 barrels of crude oil and 100 barrels of total fluid per day. [District Rules 2201 and 4623] Federally Enforceable Through Title V Permit
8. Annual throughput of this tank shall not exceed 600 barrels of crude oil and 1,200 barrels of total fluid. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Permittee shall maintain monthly records of average daily crude oil and total fluid throughput. [District Rules 2201 and 4623] Federally Enforceable Through Title V Permit
10. All records required to be maintained by this permit shall be maintained for a period of at least five years and shall be made readily available for District inspection upon request. [District Rule 4623] Federally Enforceable Through Title V Permit

DRAFT

APPENDIX B
Site Map

BUSINESS NAME:

San Joaquin Facilities Management

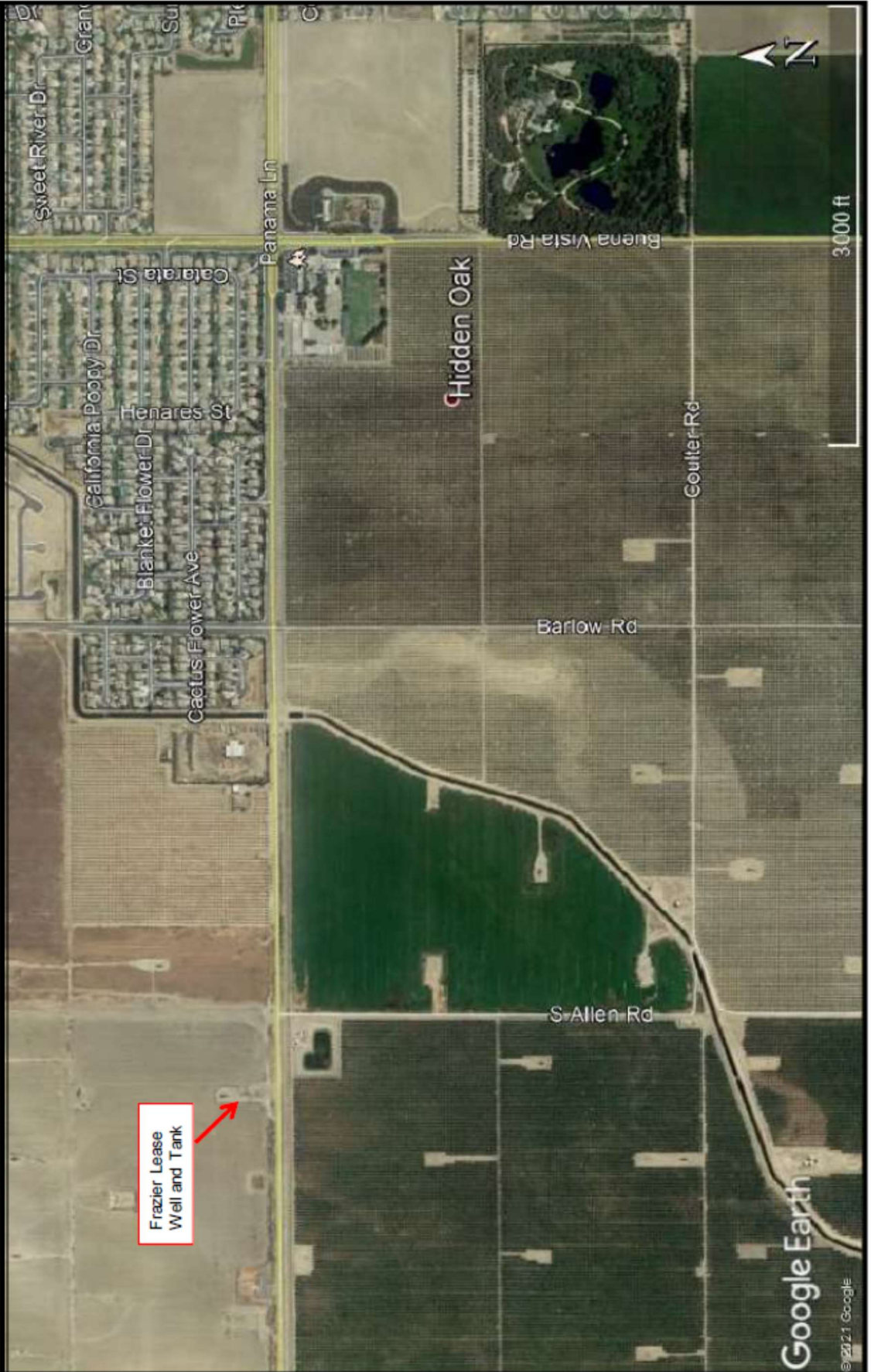
Canfield Ranch Oil Field – Frazier Lease Location Map

Google Earth

Section 23/T 30S/R26E

Prepared By:

EnviroTech
Consultants, Inc.



BUSINESS NAME:

San Joaquin Facilities Management

Canfield Ranch Oil Field – Frazier Lease Post-Project Site Diagram

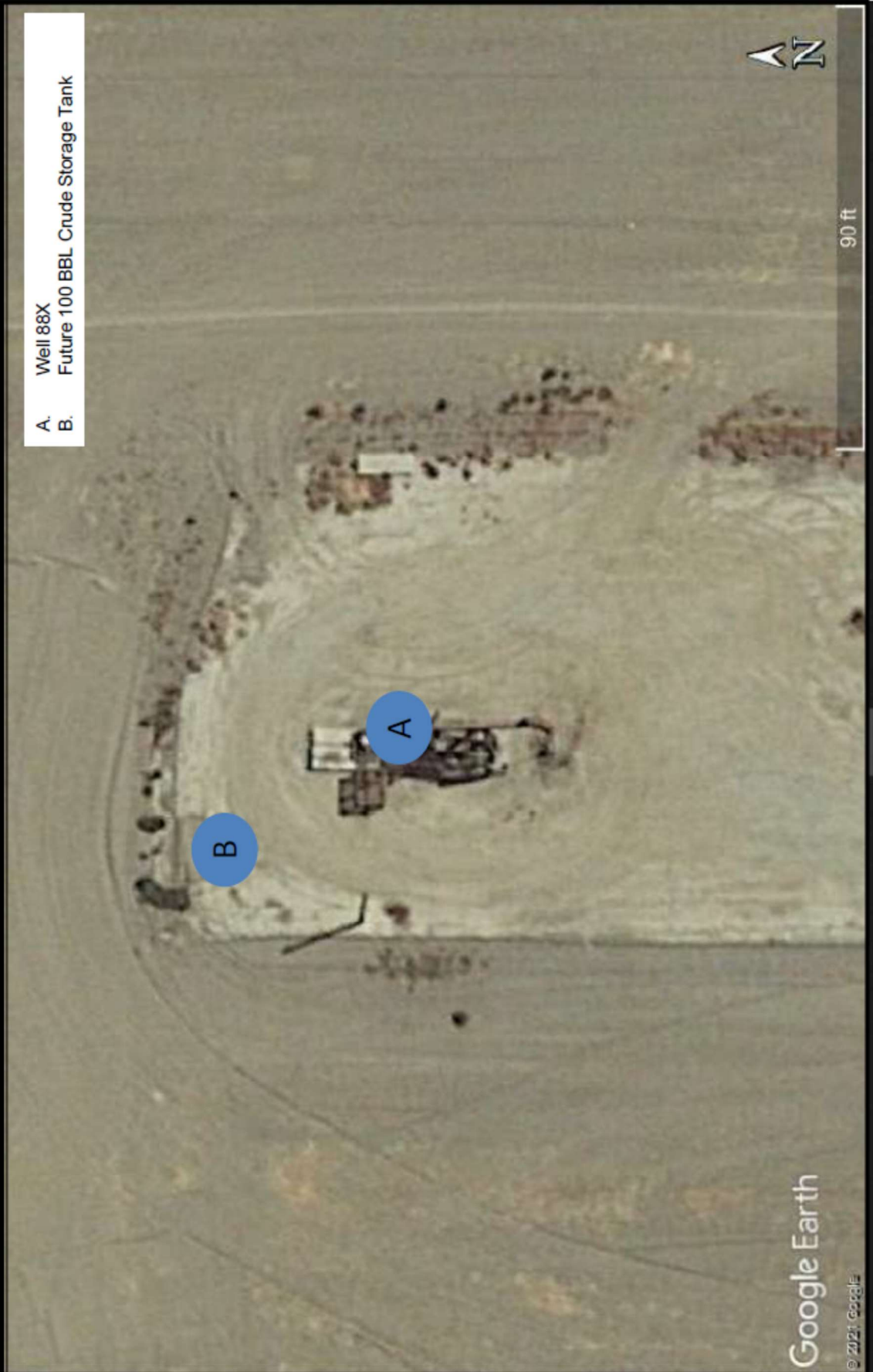
Prepared By:
EnviroTech
Consultants, Inc.

Google Earth

Section 23/T30S/R26E



- A. Well 88X
- B. Future 100 BBL Crude Storage Tank



Google Earth

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APPENDIX C

BACT Analysis

BACT ANALYSIS

Fixed Roof Oilfield Crude Oil and Petrochemical Storage or Processing Tank

I. Proposal

A project specific top-down BACT analysis will be performed for proposed 100 bbl fixed roof crude oil storage tank.

II. Process Description

Volatile Organic Compounds (VOCs) are the only pollutant of concern with organic liquid storage tanks. VOC emissions occur when a tank is filled and headspace vapors are displaced and as a result in vapor space temperature increases. Following are methods of controlling VOC emissions from fixed roof oilfield crude oil and petrochemical storage or processing tanks:

- Fixed roof tank connected to vapor control
- Fixed roof with p/v vent

III. Emission Control Technology Evaluation:

A. BACT Applicability

District Rule 2201 Section requires that BACT shall be applied to any unit with an increase in potential emissions of any pollutant greater than 2 lb/day. The increase in potential emissions from the new 100 bbl crude oil storage tank is greater than 2 lb/day, therefore BACT is triggered.

B. BACT Policy

Pursuant to Section VI, subsection A of the District's Best Available Control Technology (BACT) Policy, the District will take a proactive approach to update the BACT Clearinghouse. Updates to the BACT Clearinghouse may occur when evaluating applications for new and modified sources, or when the District is made aware of any of the following:

- a. A new control technology or method is deemed as Achieved in Practice (AIP) for a class or category of sources;
- b. A new control technology or method is required as a part of any SIP approved by the EPA for a class or category of sources;
- c. A new control technique or emission limitation is required in an applicable federal New Source Performance Standard; or
- d. A new control technology or method is found to be technologically feasible for a class or category of sources.

This proactive BACT Determination review will address controls for petroleum and petrochemical production - fixed roof organic liquid storage or processing tanks.

C. BACT Analysis for Fixed Roof Oilfield Crude Oil and Petrochemical Storage or Processing Tank for VOC Emissions (S-2980-79-0)

Pursuant to Section IX of the District's BACT Policy, a top-down BACT analysis shall be performed as a part of the proactive BACT process for the new 100 bbl crude oil storage tank.

Step 1 - Identify All Possible Control Technologies

The rules, regulations, and BACT clearinghouses of other air districts and the permit requirements of existing operations within the District were reviewed to determine both technologically feasible, and achieved in practice controls.

Review of SIP rules approved by the EPA for this class or category of source.

The following rules were reviewed to determine potential control technologies and requirements for this class and category of source:

- San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 4623: Storage of Organic Liquids
- Bay Area Air Quality Management District (BAAQMD) Rule 5: Storage of Organic Liquids
- South Coast Air Quality Management District (SCAQMD) BACT and Rules 463: Organic Liquid Storage and Rule 1178: Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities
- Santa Barbara County Air Pollution Control District (SBAPCD) BACT Guidelines and Rule 325: Crude Oil Production and Separation and Rule 326: Storage of Reactive Compound Liquids
- Ventura County Air Pollution Control District (VCAPCD) Rule 71.1: Crude Oil Production and Separation

The SIP approved rules identified above list criteria triggering the requirement to install a vapor control system (VCS). The criteria are based on tank capacity, throughput and true vapor pressure (TVP); the requirements are summarized in the below tables.

Rule Comparison				
	PV Vent		VCS	
	Tank Capacity (gallons)	TVP (psia)	Tank Capacity (gallons)	TVP (psia)
SJVAPCD Rule 4623	1,100 to 19,800	0.5 to 11.0	1,100 to 19,800	≥11
	19,800 to 39,600	0.5 to 1.5	19,800 to 39,600	>1.5
			>39,600	>0.5
SBAPCD Rule 326 (Non Crude Oil)	<20,000	1.5	>20,000 to 40,000	1.5
			>40,000	0.5
			any	>11
SBAPCD Rule 325 (Crude Oil)	<40,000*	1.5	>40,000	>1.5
VCAPCD Rule 71.1			Tank Battery	
BAAQMD Rule 5			>264	≥11
SCAQMD Rule 1178			19,815 SSPE > 20 tons	0.1
SCAQMD Rule 463			>39,630	0.5
			>19,815	1.5

* For operators producing less than 400 bbl/day in Santa Barbara County where the tank's daily average throughput is less than 150 bbl/day.

The most stringent rule requirements triggering VCS are further summarized below. The proposed BACT guideline will have subcategories based on tank capacity and TVP to ensure adherence to the rules' requirement for VCS.

Rule Comparison Summary		
	Lowest Trigger for Requiring VCS	
	Tank Capacity (gallons)	TVP (psia)
SBAPCD Rule 326	any	≥11
SJVAPCD Rule 4623	19,800 to 39,600	>1.5
SJVAPCD Rule 4623	>39,600	>0.5
SJVAPCD Rule 4623	>39,600	>0.5

Review of BACT guidelines for this class or category of source.

The BACT guidelines from the following air districts were reviewed. Note that the VCAPCD performs top-down BACT analyses on a project-specific basis and does not have a BACT clearinghouse.

- Bay Area Air Quality Management District BACT Guidelines 167.2.1 Storage Tank Fixed Roof, Organic Liquids, <20,000 gallons, and 167-3-1 Storage Tank - Fixed Roof, Organic Liquids, ≥20,000 gallons
- South Coast Air Quality Management District BACT Guidelines: Oil and Gas Production and Storage Tanks - Liquid
- Santa Barbara County Air Pollution Control District (SBAPCD) BACT Guideline 1.3.1: Fixed roof Tanks in Oil and Gas Service

Summary of BACT Guideline Review:

The BACT guidelines reviewed require VCS or a PV vent. VCS will be required for tanks located at a site with existing waste gas incineration or disposal equipment; otherwise, a demonstration that a VCS is not cost effective or technologically feasible will be required.

a. Achieved in Practice Controls:

The SJVAPCD has 990 existing PTOs for fixed roof tanks served by vapor recovery/control and 1,513 PTOs for fixed roof tanks served by pressure vacuum vents. These PTOs were used to justify the following proposed level of AIP BACT for this determination.

1. PV relief valve set to within 10% of maximum allowable pressure.
2. The use of a vapor control system (waste gas incineration) is considered an achieved in practice control option for the following:
 - Tank(s) located at a site with existing waste gas incineration or disposal equipment; or
 - tank(s) >1,100 gallons with TVP >11 psia; or
 - tank(s) ≥19,800 gallons with TVP >1.5 psia; or
 - tank(s) >39,600 gallons with TVP >0.5 psia

b. Technologically feasible Controls:

99% vapor control system: Waste gas incinerated in steam generator, heater treater, flare or other fired equipment or transfer of noncondensable vapors to gas pipeline (if available) or reinjection to formation (if appropriate wells are available); and inspection and maintenance program pursuant to Table 3 of Rule 4623.

Step 2 - Eliminate Technologically Infeasible Options

Transfer of noncondensable vapors to gas pipeline (if available) or reinjection to formation (if appropriate wells are available)

This option is technologically infeasible for this tank installation due the lack of pipeline and reinjection well resources available near the location of the unit.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. 99% control vapor control system: Waste gas incinerated in steam generator, heater treater, flare or other fired equipment; and inspection and maintenance program pursuant to Table 3 of Rule 4623.
2. PV relief valve set to within 10% of maximum allowable pressure.

Step 4 - Cost Effectiveness Analysis

99% Vapor Control System (waste gas incineration)

A vapor control system is considered an achieved in practice option, and would not require a cost effectiveness analysis for the following:

- Tank(s) located at a site with existing waste gas incineration or disposal equipment; or
- tank(s) >1,100 gallons with TVP >11 psia; or
- tank(s) ≥19,800 gallons with TVP >1.5 psia; or
- tank(s) >39,600 gallons with TVP >0.5 psia

The True Vapor Pressure (TVP) of the proposed 4,200 gallon storage tank is not expected to exceed 11 psia. Additionally, no existing VCS equipment is located on or near the proposed tank site. The closest facility owned equipment with existing an existing VCS is approximately 3,700 ft. south of the proposed tank location, which is too far away for that VCS infrastructure to be practically usable for the proposed tank. Therefore, a VCS is not considered to be achieved in practice for this tanks and a cost effectiveness analysis is required for adding a VCS.

Per the applicant, the base price of a 3.4 MMBtu/hr waste gas incinerator, a technologically feasible control option, is \$185,000. The annual maintenance cost of the unit is estimated at \$12,000 and the expected annual electricity costs to power the unit will be about \$3,600 dollars.

The annualized capital cost is:

AP = $(P) \left\{ \frac{i(1+i)^n}{(1+i)^n - 1} \right\}$, where
AP = Equivalent Annual Capital Cost of Control Equip.
P = Present value of the control equipment
i = interest rate (use 4% per policy)
n = equipment life (assume 10 years per policy)

AP = $(P) \left\{ \frac{(0.04)(1+0.04)^{10}}{(1+0.04)^{10} - 1} \right\}$
AP = $(P) \times (0.1233) = (\$185,000) (0.1233)$
AP = \$22,810/yr
Annual Maintenance Cost = \$12,000/yr

Annual Operational Cost (Electricity Usage) = \$3,600/yr

$$\begin{aligned}\text{Total Annualized Cost} &= \text{AP} + \text{Annual Maintenance Cost} + \text{Annual Operational Cost} \\ &= (\$22,811 + \$12,000 + \$3,600)/\text{yr} \\ &= \mathbf{\$38,411/\text{yr}}\end{aligned}$$

For calculation of the amount of VOCs removed from the tank (emissions unit) with the vapor control system, 100% control is assumed. The VOCs removed annually are

$$\text{Tons/yr} = 1,097 \text{ lb/yr} / 2000 \text{ lb/ton} = 0.55 \text{ tons/yr}$$

$$\begin{aligned}\text{Total Annualized Cost} &= \$38,411/\text{yr} \div 0.55 \text{ tons/yr} \\ &= \mathbf{\$69,838/\text{ton}}\end{aligned}$$

This exceeds the cost effectiveness threshold for VOCs of \$23,600/ton. Therefore, the vapor control system is not cost effective.

PV relief valve set to within 10% of maximum allowable pressure of the tank

This control option is achieved in practice and no cost effectiveness calculation is necessary.

Step 5 - Select BACT

PV relief valve set to within 10% of maximum allowable pressure of the tank.

APPENDIX D
HRA Summary

San Joaquin Valley Air Pollution Control District Risk Management Review

To: Mohammed Muthana – Permit Services
From: Kyle J Melching – Technical Services
Date: September 14, 2021
Facility Name: SAN JOAQUIN FACILITIES MGMT
Location: LIGHT OIL CENTRAL STATIONARY SOURCE,
Application #(s): S-2980-79-0
Project #: S-1210766

1. Summary

1.1 RMR

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
79	0.01	0.02	0.00	3.08E-08	No	No
Project Totals	0.01	0.02	0.00	3.08E-08		
Facility Totals	>1	0.02	0.00	4.97E-06		

1.2 Proposed Permit Requirements

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

Unit # 79-0

1. No special requirements.

2. Project Description

Technical Services received a request on September 14, 2021 to perform a Risk Management Review (RMR) for the following:

- Unit -79-0: 100 BBL CRUDE OIL STORAGE TANK WITH P/V VENT (FRAZIER LEASE)

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 from Oilfield Fugitives were calculated using emission factors derived from 1991 source tests of central valley sites.

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 2013-2017 from Bakersfield (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
79	1	VOC	Lb	0.13	1,097

Circular Area Source Parameters				
Unit ID	Unit Description	Release Height (m)	Radius (m)	Area (m²)
79	Unit 79	1.71	3.58	40.3

4. Conclusion

4.1 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. 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

APPENDIX E

Emission Calculations

input

****FOR REFERENCE** PAINT TABLE**

PAINT COLOR	SHADE/ TYPE	PAINT FACTORS PAINT CONDITION	
		GOOD	POOR
ALUMINUM	SPECULAR	0.39	0.49
ALUMINUM	DIFFUSE	0.60	0.68
GRAY	LIGHT	0.54	0.63
GRAY	MEDIUM	0.68	0.74
RED	PRIMER	0.89	0.91
WHITE	--NONE--	0.17	0.34

LIQUID TYPE	CODE	
CRUDE OIL	0	CRUDE
MOTOR GASOLINE	1	MOTOR GAS
AVIATION GASOLINE	2	AV GAS
LIGHT NAPHTHA (RVP 9-14 PSIA)	3	LT NAPHTHA
NAPHTHA (RVP 2-8 PSIA)	4	NAPHTHA

METEOROLOGICAL DATA CODES

AREA	CODE
BAKERSFIELD	0
FRESNO	1
STOCKTON	2

****PRESS [ENTER] TO SKIP TO NEXT MODIFIABLE CELL****

GIVEN AND ASSUMED DATA	
USING THE CODES ABOVE, WHAT REGION PERMIT NUMBERS DO YOU WANT TO USE? (0, 1, OR 2)	0
USING THE CODES ABOVE, WHAT AREA METEOROLOGICAL DATA DO YOU WANT TO USE? (0, 1, 2, ...)	0
REID VAPOR PRESSURE (psia)	6.00
VAPOR MOLECULAR WEIGHT (Mv)	50.00
USING THE CODES ABOVE, WHAT TYPE OF ORGANIC LIQUID (0, 1, 2, ...)	0
VOC CONTROL EFFICIENCY	0.00
TANK SHELL DIAMETER (FEET)	11.75
TANK SHELL HEIGHT, Hs (FEET)	5.60
VENT VACUUM (ENTER "-" FOLLOWED BY A VALUE IN PSIG)	-0.03
VENT PRESSURE (POSITIVE psig)	0.03
TANK ID	Frazier
TANK USE	Stock
SJVUAPCD PERMIT#	S-2980-79-0
CONE OR DOME ROOF (C/D)	D
MAXIMUM TOTAL DAILY THROUGHPUT (BBL/DAY)	100.00
MIN LIQUID HEIGHT (USE 0.0 FT FOR DEFAULT)	0.00
TANK ROOF PAINT CONDITION, GOOD OR POOR (G/P)	G
TANK ROOF PAINT COLOR, SEE ABOVE (A/G/R/W)	G
TANK ROOF PAINT SHADE, SEE ABOVE (S/D/L/M/P/N)	M
TANK SHELL PAINT CONDITION, GOOD OR POOR (G/P)	G
TANK SHELL PAINT COLOR, SEE ABOVE (A/G/R/W)	G
TANK SHELL PAINT SHADE, SEE ABOVE (S/D/L/M/P/N)	M

MODIFIABLE DATA	
----	----
----	----
----	Y
----	--N/R--
----	----
CONE ROOF	----
GIVEN ROOF HEIGHT OR SLOPE (H/S)	s
----	0.94
TANK CONE ROOF SLOPE, Sr (DEFAULT=0.0625) (ft/ft)	0.0625
DOME ROOF	----
TANK DOME RADIUS, Rr, ie [(0.8 thru 1.2)*D] (ft)	1.00
DO YOU WANT TO ENTER A MAX LIQUID HEIGHT? (Y/N)	Y
ENTER MAXIMUM LIQUID HEIGHT (ft)	5.60
----	3.60
DO YOU WANT TO ENTER AN AVERAGE LIQUID HEIGHT? (Y/N)	Y
----	----
ENTER AVERAGE LIQUID HEIGHT (ft)	4.0
IS TANK CONSTANT LEVEL? (Y/N)	N
----	----
ARE THE CONTENTS OF THE TANK HEATED? (Y/N)	N
----	----

***RVP TO TVP CALCULATIONS FOR VARIOUS LIQUIDS

CRUDE OIL TVP CALCULATIONS IF RVP IS LESS THAN OR EQUAL TO 2 PSIA

MONTH	TVP CALCULATED USING CARB AB2588 METHOD IF RVP IS LESS THAN 2 PSIA			TVP CALCULATED USING EPA METHOD AT AN RVP OF 2 PSIA			LESSER OF TVP(AB2588) AND TVP(EPA AT 2 PSIA)		
	T(la) ave	T(ln) min	T(lx) max	T(la) ave	T(ln) min	T(lx) max	T(la) ave	T(ln) min	T(lx) max
JANUARY	N/A	N/A	N/A	0.890	0.765	1.033	0.890	0.765	1.033
FEBRUARY	N/A	N/A	N/A	0.972	0.798	1.175	0.972	0.798	1.175
MARCH	N/A	N/A	N/A	1.084	0.834	1.395	1.084	0.834	1.395
APRIL	N/A	N/A	N/A	1.194	0.867	1.617	1.194	0.867	1.617
MAY	N/A	N/A	N/A	1.353	0.947	1.893	1.353	0.947	1.893
JUNE	N/A	N/A	N/A	1.480	1.015	2.111	1.480	1.015	2.111
JULY	N/A	N/A	N/A	1.560	1.082	2.201	1.560	1.082	2.201
AUGUST	N/A	N/A	N/A	1.504	1.064	2.087	1.504	1.064	2.087
SEPTEMBER	N/A	N/A	N/A	1.372	1.008	1.838	1.372	1.008	1.838
OCTOBER	N/A	N/A	N/A	1.169	0.909	1.488	1.169	0.909	1.488
NOVEMBER	N/A	N/A	N/A	0.984	0.812	1.185	0.984	0.812	1.185
DECEMBER	N/A	N/A	N/A	0.887	0.760	1.031	0.887	0.760	1.031
ANNUAL	N/A	N/A	N/A	1.185	0.900	1.542	1.185	0.900	1.542

FOR EPA TVP CALCS ABOVE	
A CONSTAN	12.150
B CONSTAN	6418.133

CRUDE OIL TVP CALCULATIONS IF RVP IS GREATER THAN 2 PSIA

EPA PUBLICATION AP-42 SECTION 12.3-4 SURFACE TEMP			
MONTH	@ T(la)	@ T(ln)	@ T(lx)
JANUARY	3.95	3.50	4.44
FEBRUARY	4.24	3.63	4.92
MARCH	4.62	3.75	5.64
APRIL	4.99	3.87	6.34
MAY	5.50	4.15	7.18
JUNE	5.91	4.38	7.83
JULY	6.16	4.61	8.09
AUGUST	5.99	4.55	7.76
SEPTEMBER	5.56	4.36	7.02
OCTOBER	4.90	4.02	5.94
NOVEMBER	4.28	3.67	4.96
DECEMBER	3.94	3.49	4.44
ANNUAL	4.96	3.99	6.11

EPA PUBLICATION AP-42 SECTION 12.3-4	
CONSTANT A	11.09
CONSTANT B	5082.22

DISTILLATE OIL TVP CALCULATIONS

EPA PUBLICATION AP-42 SECTION 12.3-3 SURFACE TEMP			
MONTH	@ T(la)	@ T(ln)	@ T(lx)
JANUARY	2.61	2.22	3.06
FEBRUARY	2.86	2.32	3.51
MARCH	3.22	2.43	4.21
APRIL	3.57	2.54	4.94
MAY	4.08	2.79	5.84
JUNE	4.49	3.00	6.56
JULY	4.75	3.21	6.86
AUGUST	4.57	3.16	6.48
SEPTEMBER	4.14	2.98	5.66
OCTOBER	3.49	2.67	4.52
NOVEMBER	2.90	2.36	3.54
DECEMBER	2.60	2.20	3.05
ANNUAL	3.54	2.64	4.69

EPA PUBLICATION AP-42 SECTION 12.3-3	
CONSTANT A	14.07
CONSTANT B	6862.44

TRUE VAPOR PRESSURE FOR LIQUID

TRUE VAPOR PRESSURE FOR LIQUID			
LIQUID TYPE: CRUDE			
SURFACE TEMP			
MONTH	@ T(la)	@ T(ln)	@ T(lx)
JANUARY	3.95	3.50	4.44
FEBRUARY	4.24	3.63	4.92
MARCH	4.62	3.75	5.64
APRIL	4.99	3.87	6.34
MAY	5.50	4.15	7.18
JUNE	5.91	4.38	7.83
JULY	6.16	4.61	8.09
AUGUST	5.99	4.55	7.76
SEPTEMBER	5.56	4.36	7.02
OCTOBER	4.90	4.02	5.94
NOVEMBER	4.28	3.67	4.96
DECEMBER	3.94	3.49	4.44
ANNUAL	4.96	3.99	6.11

***METEOROLOGICAL DATA

	BAKERSFIELD						FRESNO						STOCKTON					
	MIN TEMP	MAX TEMP	SOLAR I FACTOR	AVE WIND SPEED	ANN AVG TEMP	ATMOSPH PRESS	MIN TEMP	MAX TEMP	SOLAR I FACTOR	AVE WIND SPEED	ANN AVG TEMP	ATMOSPH PRESS	MIN TEMP	MAX TEMP	SOLAR I FACTOR	AVE WIND SPEED	ANN AVG TEMP	ATMOSPH PRESS
JANUARY	40.3	56.9	717	4.90	--	--	39.9	55.0	638	4.30	--	--	39.5	54.5	573	6.70	--	--
FEBRUARY	43.7	62.9	1031	5.60	--	--	43.1	61.1	973	5.10	--	--	42.2	60.4	907	7.20	--	--
MARCH	46.9	69.0	1543	6.00	--	--	46.5	67.4	1519	5.80	--	--	44.3	66.5	1445	7.60	--	--
APRIL	49.8	74.1	2010	6.90	--	--	49.6	73.1	2002	7.40	--	--	47.0	71.7	1879	8.90	--	--
MAY	57.8	83.3	2358	7.40	--	--	56.9	83.2	2368	8.30	--	--	52.8	80.6	2251	9.60	--	--
JUNE	64.2	90.6	2570	7.60	--	--	62.4	90.9	2573	8.50	--	--	57.6	87.8	2525	10.10	--	--
JULY	70.7	96.9	2500	6.90	--	--	68.3	97.7	2534	7.60	--	--	60.9	93.4	2510	8.90	--	--
AUGUST	69.3	95.7	2293	6.70	--	--	66.7	96.3	2290	6.90	--	--	60.4	92.3	2256	8.30	--	--
SEPTEMBER	64.5	90.4	1911	6.00	--	--	62.2	90.7	1895	6.00	--	--	57.5	88.5	1844	7.40	--	--
OCTOBER	55.3	79.0	1411	5.40	--	--	53.7	78.5	1383	4.70	--	--	50.9	78.0	1308	6.50	--	--
NOVEMBER	45.3	65.7	952	4.70	--	--	44.6	64.7	889	4.00	--	--	43.1	64.6	824	5.80	--	--
DECEMBER	39.7	57.3	696	4.90	--	--	39.4	55.1	602	4.30	--	--	38.9	54.7	552	6.90	--	--
ANNUAL	54.0	76.8	1666	6.00	65.40	14.43	52.8	76.1	1639	6.00	63.28	14.56	49.6	74.4	1573	7.80	61.55	14.72

***** THESE TABLES DO NOT NEED TO BE CHANGED

QUARTER	CALENDAR MONTH	AVG. AMBIENT TEMP		AVERAGE TEMP-F	DELTA T(amb)	SOLAR INS BTU/FT²-DAY	LIQ. BULK Tb-F	SURFACE TEMP			DAILY-del T (vapor)	TRUE VAPOR PRESSURE			DAILY-del P (vapor)	VAPOR DENSITY Ww	EXPANSION FACTOR, Ke	SATURATION FACTOR, Ks
		MIN-F	MAX-F					T(la) ave	T(ln) min	T(lx) max		@ T(la)	@ T(ln)	@ T(lx)				
FIRST	JANUARY	40.30	56.90	48.60	16.60	717	68.48	63.58	57.18	69.99	25.60	3.95	3.50	4.44	0.94	0.035	0.133	0.665
	FEBRUARY	43.70	62.90	53.30	19.20	1031	68.48	67.34	58.98	75.70	33.45	4.24	3.63	4.92	1.30	0.037	0.185	0.649
	MARCH	46.90	69.00	57.95	22.10	1543	68.48	72.14	60.81	83.46	45.29	4.62	3.75	5.64	1.89	0.040	0.271	0.629
SECOND	APRIL	49.80	74.10	61.95	24.30	2010	68.48	76.40	62.46	90.35	55.77	4.99	3.87	6.34	2.47	0.043	0.359	0.611
	MAY	57.80	83.30	70.55	25.50	2358	68.48	82.06	66.24	97.87	63.26	5.50	4.15	7.18	3.03	0.047	0.450	0.588
	JUNE	64.20	90.60	77.40	26.40	2570	68.48	86.21	69.23	103.20	67.94	5.91	4.38	7.83	3.45	0.050	0.522	0.570
THIRD	JULY	70.70	96.90	83.80	26.20	2500	68.48	88.65	72.03	105.27	66.46	6.16	4.61	8.09	3.48	0.052	0.535	0.560
	AUGUST	69.30	95.70	82.50	26.40	2293	68.48	86.97	71.30	102.63	62.67	5.99	4.55	7.76	3.21	0.051	0.487	0.567
	SEPTEMBER	64.50	90.40	77.45	25.90	1911	68.48	82.69	68.93	96.45	55.03	5.56	4.36	7.02	2.66	0.048	0.394	0.585
FOURTH	OCTOBER	55.30	79.00	67.15	23.70	1411	68.48	75.47	64.49	86.46	43.93	4.90	4.02	5.94	1.92	0.043	0.277	0.615
	NOVEMBER	45.30	65.70	55.50	20.40	952	68.48	67.88	59.68	76.09	32.81	4.28	3.67	4.96	1.28	0.038	0.183	0.647
	DECEMBER	39.70	57.30	48.50	17.60	696	68.48	63.43	56.95	69.91	25.92	3.94	3.49	4.44	0.95	0.035	0.134	0.666
ANNUAL		54.00	76.80	65.40	22.80	1666	68.48	76.07	64.04	88.11	48.14	4.96	3.99	6.11	2.12	0.043	0.307	1.000

(based on annual avg temp, E18)

Use annual avc N (for program testing only)

CALCULATED DATA	
REID VAPOR PRESSURE, RVP	6.00
ATMOSPHERIC PRESSURE	14.430
CRUDE OIL VAPOR PRESS. CONSTANT A	11.087
CRUDE OIL VAPOR PRESS. CONSTANT B	5082.220
PAINT FACTOR	0.68
SLOPE OF DISTILLATION CURVE, S	0.0
VAPOR PRESSURE FUNCTION, P*	0.000
MAX LIQUID WORKING VOLUME, Vlx (BBL)	108.152
TURNOVERS PER YEAR	12.0
MAXIMUM LIQUID HEIGHT (ft)	5.6
MINIMUM LIQUID HEIGHT (ft)	0.00
WORKING HEIGHT (MAX. HT. - MIN. HT., ft)	5.60
DOME ROOF	----
TANK DOME RADIUS, Rr (ft)	11.750
TANK SHELL RADIUS, Rs (ft)	5.875
TANK ROOF HEIGHT, Hr (ft)	1.574
ROOF OUTAGE, Hro (ft)	0.806
CONE ROOF	----
ROOF OUTAGE, Hro (GIVEN ROOF HEIGHT) (ft)	0.313
ROOF OUTAGE, Hro (GIVEN ROOF SLOPE) (ft)	0.122
K(p) = [0.75 FOR CRUDE OILS/1.0 FOR ALL OTHERS]	0.750

DETERMINE LARGEST QUARTER		
	TOTAL	AVERAGE
QUARTER 1 EMISSIONS	0	0
QUARTER 2 EMISSIONS	0	1
QUARTER 3 EMISSIONS	2	0
QUARTER 4 EMISSIONS	0	0
	2	1

==ROOF PAINT FACTOR AND COLOR REFERENCE		
ALUMINUM, SPECULAR, GOOD	0	0
ALUMINUM, SPECULAR, POOR	0	---
ALUMINUM, DIFFUSE, GOOD	0	---
ALUMINUM, DIFFUSE, POOR	0	---
GRAY, LIGHT, GOOD	0	1
GRAY, LIGHT, POOR	0	---
GRAY, MEDIUM, GOOD	0.68	---
GRAY, MEDIUM, POOR	0	---
RED, PRIMER, GOOD	0	0
RED, PRIMER, POOR	0	---
WHITE, NONE, GOOD	0	0
WHITE, NONE, POOR	0	---
ROOF PAINT FACTOR/COLOR	0.68	1

==SHELL PAINT FACTOR AND COLOR REFERENCE			
ALUMINUM, SPECULAR, GOOD	0	0	0
ALUMINUM, SPECULAR, POOR	0	---	---
ALUMINUM, DIFFUSE, GOOD	0	---	---
ALUMINUM, DIFFUSE, POOR	0	---	---
GRAY, LIGHT, GOOD	0	1	---
GRAY, LIGHT, POOR	0	---	---
GRAY, MEDIUM, GOOD	0.68	---	---
GRAY, MEDIUM, POOR	0	---	---
RED, PRIMER, GOOD	0	0	0
RED, PRIMER, POOR	0	---	---
WHITE, NONE, GOOD	0	0	0
WHITE, NONE, POOR	0	---	---
SHELL PAINT FACTOR/COLOR	0.68	1	1

MONTH	TURNOVERS		TURNOVER=FULL-->EMPTY		CALC. AVE LIQ. HT.	USER AVE LIQ. HT.	AVE LIQUID HEIGHT, HI	VAPOR SPACE		VAPOR SPACE	
	PER MONTH	WHOLE T/O	PARTIAL T/O	AVE				DOME Hvo	VOLUME, Vv	CONE Hvo	VOLUME, Vv
JANUARY	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
FEBRUARY	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
MARCH	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
APRIL	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
MAY	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
JUNE	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
JULY	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
AUGUST	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
SEPTEMBER	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
OCTOBER	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
NOVEMBER	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77
DECEMBER	1.00	2.80	0.00	2.80	2.80	4.00	4.00	2.41	260.89	1.72	186.77

TANK ID	TANK USE	SJVUAPCD PERMIT #	TANK TYPE H OR V	SHELL DIMENSIONS		CAPACITY (BBL)	ROOF TYPE (C/D)	VENT PSIG	
				D (FT)	Hs (FT)			VAC.	PRESS.
3	Stock	S-2980-79-0	VERTICAL	11.8	5.6	108.2	DOME	-0.03	0.03

TANK ROOF		PAINT FACTOR	LIQUID DATA				CONSTANT LEVEL?	VAPOR MOL. WT.	VOC CNTRL %EFF (w/w)
COND.	COLOR		TYPE	Ht=H(lx)	Kp	RVP			
GOOD	GRAY	0.68	CRUDE	5.6	0.75	6.00	NO	50.00	0.0

UNCONTROLLED EMISSIONS

CALENDAR		SURFACE T(la) F	CALC TVP @ T(la)	RATE (BBL/MON)	TURNOVER PER MON.	FAC-(Kn)	VOC (LBM/MONTH)			TOTAL (LBM/QTR)
QUARTER	MONTH						Ls	Lw	TOTAL (Lt)	
FIRST	JANUARY	63.58	3.95	100	1.00	1.000	25.16	16.03	41.19	165.85
	FEBRUARY	67.34	4.24	100	1.00	1.000	32.86	17.18	50.03	
	MARCH	72.14	4.62	100	1.00	1.000	55.89	18.74	74.63	
SECOND	APRIL	76.40	4.99	100	1.00	1.000	74.46	20.22	94.68	359.64
	MAY	82.06	5.50	100	1.00	1.000	101.15	22.32	123.47	
	JUNE	86.21	5.91	100	1.00	1.000	117.51	23.97	141.48	
THIRD	JULY	88.65	6.16	100	1.00	1.000	126.84	24.99	151.82	399.08
	AUGUST	86.97	5.99	100	1.00	1.000	114.09	24.29	138.38	
	SEPTEMBER	82.69	5.56	100	1.00	1.000	86.31	22.57	108.88	
FOURTH	OCTOBER	75.47	4.90	100	1.00	1.000	58.86	19.89	78.75	172.44
	NOVEMBER	67.88	4.28	100	1.00	1.000	34.96	17.35	52.31	
	DECEMBER	63.43	3.94	100	1.00	1.000	25.39	15.98	41.37	

CONTROLLED EMISSIONS (BASED ON MONTHLY CALCULATIONS)

CALENDAR		SURFACE T(la) F	CALC TVP @ T(la)	RATE (BBL/QTR)	TURNOVER PER QTR.	FAC-(Kn)	VOC (LBM/QTR)		
QUARTER	MONTH						Ls	Lw	TOTAL (Lt)
FIRST	JAN-MAR	67.69	4.27	9000	3	1.000	114	52	166
SECOND	APR-JUN	81.56	5.47	9100	3	1.000	293	67	360
THIRD	JUL-SEP	86.10	5.90	9200	3	1.000	327	72	399
FOURTH	OCT-DEC	68.93	4.37	9200	3	1.000	119	53	172
QUARTERLY AVERAGE		76.07	5.00	9125			213	61	274
DAILY AVERAGE (LB/DAY, BASED ON MONTHLY CALCULATIONS)							2.3	0.7	3.0
ANNUAL EMISSIONS (LB/YEAR, BASED ON MONTHLY CALCULATIONS)							853	244	1097

Tank Emission Calculation Spreadsheet, version 01/23/03

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.

S-2980-79-0

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$$\begin{aligned} \text{PE2}_{\text{quarterly}} &= \text{PE2}_{\text{annual}} \div 4 \text{ quarters/year} \\ &= 1,097 \text{ lb/year} \div 4 \text{ qtr/year} \\ &= 274.3 \text{ lb VOC/qtr} \end{aligned}$$

$$\begin{aligned} \text{PE1}_{\text{quarterly}} &= \text{PE1}_{\text{annual}} \div 4 \text{ quarters/year} \\ &= 0 \text{ lb/year} \div 4 \text{ qtr/year} \\ &= 0 \text{ lb PM}_{10}\text{/qtr} \end{aligned}$$

Quarterly NEC [QNEC]			
Pollutant	PE2 (lb/qtr)	PE1 (lb/qtr)	QNEC (lb/qtr)
NO _x	0	0	0
SO _x	0	0	0
PM ₁₀	0	0	0
CO	274.3	0	274.3
VOC	0	0	0

APPENDIX G
Compliance Certification

March 15, 2021

Mr. Leonard Scandura
Permit Services Manager
San Joaquin Valley Unified
Air Pollution Control District
34946 Flyover Ct.
Bakersfield, CA 93308

**Subject: Federal Major Modification Statewide Compliance Certification
S-2980 ATC Application – Add 100 BBL Crude Oil Storage Tank
(Frazier Lease)**

Dear Mr. Scandura:

I hereby certify that all major Stationary Sources owned or operated by such person (or by any entity controlling, controlled by, or under common control with such person) in California, which are subject to emission limitations, are in compliance or on a schedule for compliance with all applicable emission limitations and standards.



Signature

Operations Manager

Title

APPENDIX H

ERC Surplus Analysis

II. Individual ERC Certificate Analysis

ERC Certificate S-4910-1

A. ERC Background

Criteria Pollutant: VOC

ERC Certificate S-4190-1 is a certificate that was split out from parent ERC Certificate S-417-1. Original ERC Certificate S-417-1 was issued to San Joaquin Facilities Management on December 6, 1996 under project S-950784. The ERCs were generated from the addition of a vapor recovery system to four existing petroleum storage tanks (Permits S-2246-7-1, '8-1, '9-1, and '10-1). The following table summarizes the values of the original parent certificate and the current value of the subject certificate proposed to be utilized as a part of the current District analysis:

ERC Certificate S-4910-1				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Original Value of Parent Certificate S-417-1	52,331	47,077	51,194	56,504
Current Value of ERC Certificate S-4910-1	33,091	27,806	31,888	37,172

B. Applicable Rules and Regulations at Time of Original Banking Project

Based on the application review for the original ERC banking project, the following rules and regulations were evaluated to determine the surplus value of actual emission reductions of VOCs generated by the reduction project.

1. District Rules

Rule 2301 - Emission Reduction Credit Banking (12/17/92)

The application review for the original ERC banking project demonstrated that the ERC credit complied with District Rule 2301 requirements at the time it was issued.

Rule 4623 – Storage of Organic Liquids (12/17/1992)

This rule applied to any tank with a capacity of 1,100 gallons or greater in which any organic liquid is placed, held, or stored. Section 4.2.2 of this rule exempted crude oil storage tanks operated by small oil producers from vapor control requirements if they met certain requirements. The four petroleum storage tanks evaluated in the original ERC banking project were determined to have met the criteria for the exemption.

The application review for the original ERC banking project demonstrated that the four petroleum storage tanks were not subject to any VOC emission limits at the time the VOC emissions were banked. Therefore, the original VOC emission reductions were surplus of all applicable District Rule requirements.

2. Federal Rules and Regulations

There were no applicable federal rules or regulations identified that applied at the time of the original ERC banking action; therefore, no further discussion is required.

C. New or Modified Rule and Regulations Applicable to the Original Banking Project

All District and federal rules and regulations that have been adopted or amended since the date the original banking project was finalized will be evaluated below:

1. District Rules:

Rule 4409 Components at Light Crude Oil Production Facilities, Natural Gas Production Facilities, And Natural Gas Processing Facilities (4/20/2005)

This rule applies to components containing or contacting VOC streams at light crude oil production facilities, natural gas production facilities, and natural gas processing facilities. Section 4.1 of this rule exempts components subject to Rule 4623 from the requirements of this rule. The four petroleum storage tanks evaluated in the original ERC banking project were and continue to be subject to Rule 4623. Therefore, the VOC control requirements of this rule are not applicable.

Rule 4623 Storage of Organic Liquids (5/19/2005)

This rule applies to any tank with a capacity of 1,100 gallons or greater in which any organic liquid is placed, held, or stored. The amended rule no longer exempts tanks operated by small oil producers from vapor control requirements. The latest vapor control requirements are dependent on each tank's, capacity, throughput, and true vapor pressure of the tank contents. The following table illustrates the latest potentially applicable Rule 4623 VOC control requirements.

Table 1 – Small Producer VOC Control System Requirements for Crude Oil Storage Tanks

Tank Capacity (gallons)	TVP and Crude Oil Throughput		
	0.5 psia to <11 psia and a tank throughput of >50 to <150 barrels of crude oil per day	0.5 psia to <11 psia and a tank throughput \geq 150 barrels of crude oil per day	\geq 11 psia and regardless of crude oil tank throughput
(Group A) 1,100 to 39,600	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Pressure vessel or vapor recovery system
(Group B) >39,600	Pressure-vacuum relief valve, or internal floating roof, or external floating roof, or vapor recovery system	Internal floating roof, or external floating roof, or vapor recovery system	Pressure vessel or vapor recovery system

Tank operating parameters and historical records obtained from the original ERC banking project were reviewed to determine which VOC controls would currently be required for each tank.

1. Permit S-2246-7-1:

Tank Operating Parameters	
Throughput (bbl)	≥ 150
True Vapor Pressure	0.5 psia < TVP < 11 psia
Capacity	31,500 gallons
Roof Type	Fixed Roof
Rule 4623 Requirement	Pressure Relief Valve

Prior to the emission reductions from the installation of the vapor control system this tank was equipped with a pressure relief valve.

2. Permit S-2246-8-1:

Tank Operating Parameters	
Throughput (bbl)	≥ 150
True Vapor Pressure	0.5 psia < TVP < 11 psia
Capacity	84,000 gallons
Roof Type	Fixed Roof
Rule 4623 Requirement	Vapor Recovery System

This tank had a fixed roof and was served by a VOC control system when the emission reductions from this tank were banked. Section 5.6.1.2 of Rule 4623 specifies tanks equipped with VOC control devices must reduce emissions 95% by weight.

3. Permit S-2246-9-1:

Tank Operating Parameters	
Throughput (bbl)	≥ 150
True Vapor Pressure	0.5 psia < TVP < 11 psia
Capacity	21,000 gallons
Roof Type	Fixed Roof
Rule 4623 Requirement	Pressure Relief Valve

Prior to the emission reductions from the installation of the vapor control system this tank was equipped with a pressure relief valve.

4. Permit S-2246-10-1:

Tank Operating Parameters	
Throughput (bbl)	≥ 150
True Vapor Pressure	0.5 psia < TVP < 11 psia
Capacity	21,000 gallons
Roof Type	Fixed Roof
Rule 4623 Requirement	Pressure Relief Valve

Prior to the emission reductions from the installation of the vapor control system this tank was equipped with a pressure relief valve.

Rule 4623 contains the only applicable VOC emission control requirements. Any adjustments to the surplus value of emission reductions from these units due to the requirements of this rule will be calculated in Section D of this analysis.

2. Federal Rules and Regulations:

The following Federal rules and regulations were reviewed and determined to either be not applicable, or contained exemptions for the four petroleum tanks evaluated in the original ERC banking project:

40 CFR Part 60 Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978

This subpart does not apply to storage vessels of petroleum at production facilities prior to custody transfer. Facility S-2246 was a light oil production facility that stored organic materials they produced prior to custody transfer, therefore this subpart is not applicable.

40 CFR Part 60 Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984

This subpart applies to each storage vessel with a storage capacity greater than 151,416 liters (40,000 gallons) that is used to store petroleum liquids for which construction is commenced after May 18, 1978, but prior to July 23, 1984. The four vessels at this light oil production facility were constructed after July 23, 1984, therefore this subpart is not applicable.

40 CFR Part 60 Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

Vessels with a design capacity less than or equal to 1,589.874 m³ used for petroleum or condensate stored, processed, or treated prior to custody transfer are exempt from this subpart. The four vessels at this light oil production facility have capacities less than 10,000 bbl (1,589.874 m³), and are therefore not subject to this subpart.

40 CFR Part 63 Subpart HH National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities

This subpart applies to the major area sources of hazardous air pollutants (HAP) that operate glycol dehydration units, storage vessels, ancillary equipment, and compressors processing hazardous gases at natural gas plants. The facility in which these four storage tanks operated at was a major area source that was compliant with District Rule 2530. District Rule 2530 required facility HAP emissions to be less than half the major source threshold (5 tons per year). Since the facility was in compliance with District Rule 2530, the facility was not a major area source of HAP and this subpart is not applicable.

There are no new or modified federal rules or regulations that would apply to the four petroleum storage tanks in the original ERC banking project. Therefore, the original VOC

emission reductions continue to be surplus of Federal rules and regulations.

D. Surplus at Time of Use Adjustments to ERC Quantities

As demonstrated in the section above, rules and regulations applicable to permit unit(s) in the original banking project have been adopted or amended since the date the original banking project was finalized. The emissions limits from these new/modified rules and regulations will be compared to the pre and post-project emission limits of each permit unit included in the original banking project to determine any discounting of the original surplus value of emission reductions due to the new/modified rule or regulation. Emission factor determinations and surplus calculations are included in Attachment 2.

The amount of ERCs issued from each permit unit in the original banking project, the percentage of that amount which was discounted due to a new/modified rule or regulation, and the current surplus value of the amount of ERCs from each permit unit is calculated in the table(s) below:

Surplus Value Calculations for Permit Unit S-2246-7-1 750 BBL Fixed Roof Petroleum Wash Tank		
(A) Emission Reductions Contributing to ERC	24,853	lb/year
Pre-Project (EF1)	3.699	lb-VOC/bbl
Post-Project (EF2)	0.041 (99% Control Efficiency)	lb-VOC/bbl
Most Stringent Applicable Rule (EF _{Rule}): District Rule 4623	3.699 (10% Control Efficiency)	lb-VOC/bbl
(B) Percent Discount*	0%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	24,853	lb/year

*If $EF_{Rule} \leq EF2$, Percent Discount = 100%, or
 If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Surplus Value Calculations for Permit Unit S-2246-8-1 2,000 BBL Fixed Roof Petroleum Storage Tank		
(A) Emission Reductions Contributing to ERC	130,477	lb/year
Pre-Project (EF1)	3.699	lb-VOC/bbl
Post-Project (EF2)	0.041 (99% Control Efficiency)	lb-VOC/bbl
Most Stringent Applicable Rule (EF _{Rule}): District Rule 4623	0.206 (95% Control Efficiency)	lb-VOC/bbl
(B) Percent Discount*	95.5%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	5,864	lb/year

*If $EF_{Rule} \leq EF2$, Percent Discount = 100%, or
 If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Surplus Value Calculations for Permit Unit S-2246-9-1 500 BBL Fixed Roof Petroleum Wash Tank		
(A) Emission Reductions Contributing to ERC	20,711	lb/year
Pre-Project (EF1)	3.699	lb-VOC/bbl
Post-Project (EF2)	0.041 (99% Control Efficiency)	lb-VOC/bbl
Most Stringent Applicable Rule (EF _{Rule}): District Rule 4623	3.699 (10% Control Efficiency)	lb-VOC/bbl
(B) Percent Discount*	0%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	20,711	lb/year

*If $EF_{Rule} \leq EF2$, Percent Discount = 100%, or
 If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Surplus Value Calculations for Permit Unit S-2246-10-1 500 BBL Fixed Roof Petroleum Storage Tank		
(A) Emission Reductions Contributing to ERC	31,066	lb/year
Pre-Project (EF1)	3.699	lb-VOC/bbl
Post-Project (EF2)	0.041 (99% Control Efficiency)	lb-VOC/bbl
Most Stringent Applicable Rule (EF _{Rule}): District Rule 4623	3.699 (10% Control Efficiency)	lb-VOC/bbl
(B) Percent Discount*	0%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	31,066	lb/year

*If $EF_{Rule} \leq EF2$, Percent Discount = 100%, or
If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
 $(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Total Discount Percentage for ERC Certificate

The total percentage ERC S-4910-1 is discounted by due to new and modified rules and regulations is summarized in the following table:

Total Percent Discount Summary for ERC Certificate S-417-1			
Permit(s)	Amount of ERCs Issued (lb/year)	Percent Discount	Surplus Value (lb/year)
S-2246-7-1	24,853	0.0%	24,853
S-2246-8-1	130,477	95.5%	5,864
S-2246-9-1	20,711	0.0%	20,711
S-2246-10-1	31,066	0.0%	31,066
Total	207,106	--	82,493
Total Percent Discount*		60.2%	

* Total Percent Discount = $[(\text{Total Amount of ERCs Issued} - \text{Total Surplus Value}) \div \text{Total Amount of ERCs Issued}] \times 100$

E. Surplus Value of ERC Certificate

As shown in the previous section, the surplus at time of use value of this ERC certificate will be adjusted. The current face value of the ERC certificate, the percent the current value is discounted by based on the surplus analysis in the previous section, and the current calculated surplus value of the ERC certificate is shown in the table below:

ERC Certificate S-4910-1 – Criteria Pollutant VOC					
		1 st Qtr. (lb/qtr)	2 nd Qtr. (lb/qtr)	3 rd Qtr. (lb/qtr)	4 th Qtr. (lb/qtr)
(A)	Current ERC Quantity	33,091	27,806	31,888	37,172
(B)	Percent Discount	60.2%	60.2%	60.2%	60.2%
(C) = (A) x [1 – (B)]	Surplus Value	13,170	11,067	12,691	14,794

Attachment

1. Summary of Equipment with Banked Emission Reductions in Original ERC Banking Project
2. Surplus Value Calculations

ATTACHMENT 1

Summary of Equipment with Banked Emission Reductions in Original ERC Banking Project

District Permit	Equipment Summary
S-2246-7-1	750 BBL Fixed Roof Petroleum Wash Tank
S-2246-8-1	2,000 BBL Fixed Roof Petroleum Storage Tank
S-2246-9-1	500 BBL Fixed Roof Petroleum Wash Tank
S-2246-10-1	500 BBL Fixed Roof Petroleum Storage Tank

ATTACHMENT 2

Surplus Value Calculations

Background

VOC emissions banked under the original ERC project were calculated using the vapor flow rate through the vapor recovery system that was installed to reduce the vapor emissions from the four crude oil tanks. The emission reductions from all four vessels in the original banking project were calculated collectively. To calculate the amount of the ERC that is currently surplus of Rule 4623 requirements, the VOC emission contributions from each tank need be determined.

Assumptions

- *EF = 0.0854 Mcf/bbl (as calculated in original banking project)*
- *Vapor is 53.76% Non-Methane and Non-Ethane VOC by weight (% VOC by Weight)*
- *Prior to the installation of a vapor control system, units were equipped with pressure relief valves (10% control efficiency)*
- *Vapor control system installed is at least 99% efficient*
- *Vapor Density is 1lb/0.01117 Mcf (as expressed in original banking project)*
- *The proportion of banked ERC from each tank is based on the percent contribution determined from the original banking project.*
- *The percentage of VOC emissions contributing to the ERC from each tank listed in the table below was determined from information in the original ERC banking project.*

ERC Contribution for Each Tank				
Year	S-2246-7-1	S-2246-8-1	S-2246-9-1	S-2246-10-1
Percent Contribution to ERC*	12%	63%	10%	15%

*Percent Contributed to ERC = $PE / \sum (PE_n)$

Emission factors are calculated below:

Emission Factor (EF1) = EF x Vapor Density x % VOC by Weight x (1-Control Efficiency)
 = 0.0854 Mcf/bbl x 1 lb/0.01117 Mcf x 53.76% x (1 - 10%)
 = **3.699 lb-VOC/bbl**

Emission Factor (EF2) = EF x Vapor Density x % VOC by Weight x (1-Control Efficiency)
 = 0.0854 Mcf/bbl x 1 lb/0.01117 Mcf x 53.76% x (1 - 99%)
 = **0.041 lb-VOC/bbl**

The emission factor for a tank equipped with pressure relief valve as required by Rule 4623:

$$\begin{aligned} \text{Emission Factor (EF}_{\text{Rule}}) &= \text{EF} \times \text{Vapor Density} \times \% \text{ VOC by Weight} \times (1 - \text{Control Efficiency}) \\ &= 0.0854 \text{ Mcf/bbl} \times 1 \text{ lb}/0.01117 \text{ Mcf} \times 53.76\% \times (1 - 10\%) \\ &= \mathbf{3.699 \text{ lb-VOC/bbl}} \end{aligned}$$

The emission factor for a 95% control vapor recovery system as required by Rule 4623:

$$\begin{aligned} \text{Emission Factor (EF}_{\text{Rule}}) &= \text{EF} \times \text{Vapor Density} \times \% \text{ VOC by Weight} \times (1 - \text{Control Efficiency}) \\ &= 0.0854 \text{ Mcf/bbl} \times 1 \text{ lb}/0.01117 \text{ Mcf} \times 53.76\% \times (1 - 95\%) \\ &= \mathbf{0.206 \text{ lb-VOC/bbl}} \end{aligned}$$

Surplus Reduction Calculations:

Using the Percent Contribution to ERC for each storage tank we can estimate the how much each tank contributed to the original emission reductions banked.

Equations used in following table:

$$\text{Emission Reduction Contribution} = \text{ERC Annual Total} \times \text{Percent Contribution to ERC}$$

$$\text{Percent Discount} = [(1 - \text{CE}_1) - (1 - \text{CE}_{\text{rule}})] \times 100 \div [(1 - \text{CE}_1) - (1 - \text{CE}_2)]$$

$$\begin{aligned} \text{Total Percent Discount} &= (\text{Total Emission Reduction Contribution} - \text{Total Discounted Original ERC}) \\ &\div (\text{Total Emission Reduction Contribution}) \end{aligned}$$

$$\text{Discounted Original ERC} = \text{Emission Reduction Contribution} \times (1 - \text{Percent Discount})$$

Surplus Reduction Calculations					
Permits	S-2246-7-1	S-2246-8-1	S-2246-9-1	S-2246-10-1	Total
Percent Contribution to ERC	12%	63%	10%	15%	100%
Emission Reduction Contribution	24,853	130,477	20,711	31,066	207,106
Pre-Project Control Efficiency (CE ₁)	10.0%	10.0%	10.0%	10.0%	-
Post-Project Control Efficiency (CE ₂)	99.0%	99.0%	99.0%	99.0%	-
Required Rule 4623 Control Efficiency (CE _{rule})	10.0%	95.0%	10.0%	10.0%	-
Percent Discount	0.0%	95.5%	0.0%	0.0%	60.2%
Discounted Original ERC	24,853	5,864	20,711	31,066	82,493

Applying the 60.2% Percent Discount to the current ERC certificate:

Surplus Value = Current Value of ERC x (1- 60.2 %)

ERC Certificate S-4910-1				
Pollutant	1 st Qtr. (lb-VOC/qtr)	2 nd Qtr. (lb-VOC/qtr)	3 rd Qtr. (lb-VOC/qtr)	4 th Qtr. (lb-VOC/qtr)
Current Value of ERC Certificate S-4910-1	33,091	27,806	31,888	37,172
Surplus Value	13,170	11,067	12,691	14,794

APPENDIX I

ERC Withdrawal Calculations

ERC Withdrawal Calculation:

VOC	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC S-4910-1	33,091	27,806	31,888	37,172
ERC S-4910-1 Surplus Value	13,170	11,067	12,691	14,794
Surplus Offsets Required (Includes distance offset ratio)	411	411	412	412
Offsets Required from ERC S-4910-1	1,033	1,033	1,035	1,035
Amount Remaining	32,058	26,773	30,853	36,137
Credits reissued under ERC S-YYYY-1	32,058	26,773	30,853	36,137