



APR 04 2013

Mr. Craig Rous
Bear Creek Winery
11900 N Furry Road
Lodi, CA 95240

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # N-96
Project # N-1123569**

Dear Mr. Rous:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. Bear Creek Winery is proposing to install eight new 62,000 gallon red/white wine tanks that will be used for both the fermentation and storage of wine.

After addressing any EPA comments made during the 45-day comment period, the Authorities to Construct will be issued to the facility with Certificates of Conformity. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Rupi Gill, Permit Services Manager, at (209) 557-6400.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

DW:JH/st

Enclosures

Seyed Sadredin
Executive Director/Air Pollution Control Officer

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

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
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34946 Flyover Court
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San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT



HEALTHY AIR LIVING™

APR 04 2013

Gerardo C. Rios, Chief
Permits Office
Air Division
U.S. EPA - Region IX
75 Hawthorne St.
San Francisco, CA 94105

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # N-96
Project # N-1123569**

Dear Mr. Rios:

Enclosed for your review is the District's engineering evaluation of an application for Authorities to Construct for Bear Creek Winery at 11900 N Furry Road, Lodi, CA, which has been issued a Title V permit. Bear Creek Winery is requesting that Certificates of Conformity, with the procedural requirements of 40 CFR Part 70, be issued with this project. Bear Creek Winery is proposing to install eight new 62,000 gallon red/white wine tanks that will be used for both the fermentation and storage of wine.

Enclosed is the engineering evaluation of this application with a copy of the proposed Authorities to Construct # N-96-352-0 through N-96-359-0 with Certificates of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 45-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Rupi Gill, Permit Services Manager, at (209) 557-6400.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

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APR 04 2013

Mike Tollstrup, Chief
Project Assessment Branch
Air Resources Board
P O Box 2815
Sacramento, CA 95812-2815

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)
District Facility # N-96
Project # N-1123569**

Dear Mr. Tollstrup:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. The applicant is requesting that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. Bear Creek Winery is proposing to install eight new 62,000 gallon red/white wine tanks that will be used for both the fermentation and storage of wine.

Enclosed is the engineering evaluation of this application with a copy of the proposed Authorities to Construct # N-96-352-0 through N-96-359-0 with Certificates of Conformity. After demonstrating compliance with the Authorities to Construct, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 30-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Rupi Gill, Permit Services Manager, at (209) 557-6400.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

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**NOTICE OF PRELIMINARY DECISION
FOR THE ISSUANCE OF AUTHORITY TO CONSTRUCT AND
THE PROPOSED SIGNIFICANT MODIFICATION OF FEDERALLY
MANDATED OPERATING PERMIT**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed significant modification of Bear Creek Winery at 11900 N Furry Road, Lodi, California. Bear Creek Winery is proposing to install eight new 62,000 gallon red/white wine tanks that will be used for both the fermentation and storage of wine.

The District's analysis of the legal and factual basis for this proposed action, project #N-1123569, is available for public inspection at http://www.valleyair.org/notices/public_notices_idx.htm and at any District office. There are no emission increases associated with this proposed action. This will be the public's only opportunity to comment on the specific conditions of the modification. If requested, the District will hold a public hearing regarding issuance of this modification. For additional information, please contact the District at . Written comments on the proposed initial permit must be submitted by May 8, 2013 to **DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 4800 ENTERPRISE WAY, MODESTO, CA 95356-0244 .**

**San Joaquin Valley Air Pollution Control District
Authority to Construct
Application Review**

Facility Name:	Bear Creek Winery	Date:	March 20, 2013
Mailing Address:	11900 N Furry Road Lodi, CA 95240	Engineer:	James Harader
Contact Person:	Craig Rous	Lead Engineer:	Nick Peirce
Telephone:	(209) 368-3113		
Fax:	(209) 368-3083		
Application #(s):	N-96-352-0 through '-359-0		
Project #:	N-1123569		
Deemed Complete:	November 27, 2012		

I. PROPOSAL

Bear Creek Winery is requesting Authority to Construct permits for the installation of eight 62,000 gallon stainless steel, insulated, wine tanks (Total Volume of New Tanks: 496,000 gallons). These tanks will be used to ferment and store white and red wines.

Bear Creek Winery currently has a specific limiting condition (SLC) of 242,165 pounds of volatile organic compound (VOC) emissions per year for the fermentation and storage operations located at this facility. These added tanks will be included with the units that are subject to the 242,165 lb-VOC limit. In other words, Bear Creek Winery is not proposing to increase the SLC limit for VOC emissions.

Bear Creek Winery operates under a Title V permit. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period and 30-day public notice will be satisfied prior to the issuance of the Authority to Construct. Bear Creek Winery must apply to administratively amend their Title V permit prior to operation of the new tanks.

II. APPLICABLE RULES

Rule 2201	New and Modified Stationary Source Review Rule (4/21/11)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
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 (02/17/05)
Rule 4102	Nuisance (12/17/92)

Rule 4694 Wine Fermentation and Storage Tanks (12/15/05)
California Health & Safety Code 41700 (Public Nuisance)
California Health & Safety Code 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 11900 N Furry Road in Lodi, California. The District has determined that this location is not within 1,000 feet of any K-12 school. Therefore, noticing for California Health & Safety Code 42301.6 is not required.

IV. PROCESS DESCRIPTION

Bear Creek Winery operates a wine fermentation and storage facility. During the 'crush season', which typically lasts from August through November, both red and white grapes are received by truck and delivered to a crusher-stemmer that crushes the grapes and removes the stems. For red wines, the resultant juice, called "must", is pumped to red wine fermentation tanks for fermentation, a batch process. The red wine fermentation tanks are specifically designed to ferment the must and to allow the separation of the skins and seeds from the wine after fermentation. For white wines, the must is sent to screens and presses for separation of grape skins and seeds prior to entering the fermentation tank. Since the skins and seed have been separated, white wine fermentation is carried out in a tank that doesn't include design provisions for solids separation.

After transfer of the must (red or white) to the fermentation tank, the must is inoculated with yeast. This initiates the fermentation reactions. The yeast metabolizes the sugars in the must, converting the sugars to ethanol and carbon dioxide (CO₂). This process is an exothermic process, thus temperature must be controlled throughout the process. Refrigeration is used to maintain a temperature of 45-65°F for white wine fermentation and 70-95°F for red wine fermentation. The sugar content of the fermenting wine is measured in °Brix (weight %) and is typically 22-26° for unfermented wine, dropping to 4° or less by the end of fermentation process. For the wines produced at this facility, the final ethanol concentration is no greater than 23.9%. Batch fermentation requires 5 days per batch of red wine and 1-2 weeks per batch of white wine. VOCs are emitted during the fermentation process, along with CO₂. The VOCs are comprised primarily of ethanol along with some trace fermentation byproducts.

For white wine, the wine is directly transferred into storage tanks after completion of the fermentation process. For red wine, the grape skins are separated from the wine and sent to a press. The press crushes residual wine from grape skins. Both red and white wines are stored in refrigerated tanks year-round for bottling. Further VOC emissions occur as a result of the storage tank operation.

The proposed tanks will be used for both the fermentation and the storage of wine.

V. EQUIPMENT LISTING

The applicant is proposing to install 8 new wine storage and fermentation tanks. All of the proposed tanks are equipped with pressure/vacuum valves and tank insulation. Please refer to the Draft Authority to Construct permits in Appendix I for the tank equipment descriptions.

VI. EMISSION CONTROL TECHNOLOGY EVALUATION

VOCs, primarily ethanol, are emitted from wine fermentation and storage tanks as a result of both working losses (which occur when the liquid level in the tank changes) and breathing losses (expansion and contraction effects due to temperature variations). The proposed pressure/vacuum relief valve limits emissions of VOC's. Additionally, when wine storage tanks are insulated or located in a climate controlled building, breathing losses are considered to be negligible.

The tanks are equipped with temperature controls to maintain tank temperatures below levels that might be damaging to the yeast cells and reduces the potential for an out-of-control fermentation reaction in the tank. Since potential VOC emissions from the tanks increase with fermentation temperature, the use of temperature controls minimizes emissions.

VII. CALCULATIONS

A. Assumptions

- VOC is the only pollutant emitted by the tanks.
- The annual wine storage throughput will be equal to eight times the tank storage capacity. (per District practice)
- There will be a maximum of six fermentation cycles per year for each tank. (per applicant)
- Other assumptions will be stated as they are made for this project.

B. Emission Factors (EF)

1. Pre-Project Emission Factors (EF1)

The proposed winery tanks are new tanks; therefore, pre-project emission factors are not required.

2. Post-Project Emission Factors (EF2)

The following emission factors are applicable for these red and white wine tanks. These are based on the emission factors listed in District FYI-114, "VOC Emission Factors for Wine Fermentation and Storage Tanks (Revised 8/10/11)" and based on a maximum ethanol content of 23.9% by weight (proposed by applicant, rounded to 24% for purpose of determining emissions).

Type	Operation	EF2 (lb-VOC/1,000 gal of wine)		Source
		Daily	Annual	
White	Fermentation	1.62	2.5	District FYI -114
	Storage	0.366	0.213	
Red	Fermentation	3.46	6.2	
	Storage	0.366	0.213	

C. Calculations

1. Pre-Project Potential to Emit (PE1)

The applicant is proposing to install new tanks. Therefore, PE1 is equal to zero for each tank.

2. Post-Project Potential to Emit (PE2)

Maximum Daily VOC emissions from fermentation of white or red wine are calculated using the following formula:

$$\text{Daily VOC}_{\text{Fermentation}} = \text{Tank Capacity (gal)} \times \text{EF}_{\text{Ferment, Daily}} \text{ (lb-VOC/1000gal)}$$

Annual VOC emissions from fermentation are calculated as follows:

$$\text{Annual VOC}_{\text{Fermentation}} = \text{Tank Capacity (gal)} \times \text{Fermentation Cycles/year} \times \text{EF}_{\text{Ferment, annual}} \text{ (lb-VOC/1000 gal)}$$

Maximum daily emissions from the storage of white or red wine is equal to the following:

$$\text{Daily VOC}_{\text{Storage}} = \text{Tank Capacity (gal)} \times 5 \text{ turnovers/day} \times \text{EF}_{\text{Storage, Daily}} \text{ (lb-VOC/1000 gal)}$$

Annual VOC emissions from the storage of white or red wine is equal to the following:

$$\text{Annual VOC}_{\text{Storage}} = \text{Tank Capacity (gal)} \times 8 \text{ turnovers/year} \times \text{EF}_{\text{Storage, Annual}} \text{ (lb-VOC/1000 gal)}$$

Permit Unit	Capacity (gallons)	Fermentation Emissions (lb/day)	Fermentation Emissions (lb/year)	Storage Emissions (lb/day)	Storage Emissions (lb/year)
N-96-352-0	62,000	214.5	2,306	113.5	114
N-96-353-0	62,000	214.5	2,306	113.5	114
N-96-354-0	62,000	214.5	2,306	113.5	114
N-96-355-0	62,000	214.5	2,306	113.5	114
N-96-356-0	62,000	214.5	2,306	113.5	114
N-96-357-0	62,000	214.5	2,306	113.5	114
N-96-358-0	62,000	214.5	2,306	113.5	114
N-96-359-0	62,000	214.5	2,306	113.5	114

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

Pursuant to Section 4.9 of District Rule 2201, SSPE1 is the Potential to Emit 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 (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions (AERs) that have occurred at the source, and which have not been used on-site.

This project only involves units that emit VOC's. Therefore, SSPE1 will only be determined for VOC emissions.

Pre-Project Stationary Source Potential to Emit (SSPE1)	
Permit Numbers	PE1 VOC (lb/yr)
N-96-4-2 through N-96-351-1	242,165
SSPE1	242,165

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

Pursuant to Section 4.10 of District Rule 2201, the Post-Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid 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 that have occurred at the source, and which have not been used on-site.

The facility is proposing to include the new units into their existing SLC for VOC emissions. SSPE2 is shown in the table below.

Post-Project Stationary Source Potential to Emit (SSPE2)	
Permit Numbers	PE2 VOC (lb/yr)
N-96-4-2 through N-96-359-0	242,165
SSPE2	242,165

5. Major Source Determination

Rule 2201 Major Source Determination

The following table demonstrates that this facility is an existing Major Source for VOC emissions and will continue to be a Major Source.

Pollutant	SSPE1 (lb/yr)	SSPE2 (lb/yr)	Major Source Threshold	Existing Major Source?	New Major Source?
VOC	242,165	242,165	20,000 lb/year	Yes	No

Rule 2410 Major Source Determination

Calculations are necessary to determine whether this facility is an existing Major Source for District Rule 2410 purposes. Only VOC and CO_{2e} is emitted by this facility.

As indicated above, the pre-project facility-wide VOC potential to emit is 242,165 pounds of VOC per year, equivalent to 121.1 tons of VOC per year.

CO_{2e} is emitted during the fermentation process. Prior to adding the tanks proposed by this project, the total storage capacity for fermentation of wine is:

White Wine Fermentation Capacity: 2,449,580 gallons
 Red Wine Fermentation Capacity: 3,119,072 gallons
 Total Wine Fermentation Capacity: 5,568,652 gallons

Per the applicant, the maximum number of fermentation cycles per fermentation tank is 6 cycles/year. Therefore, the maximum fermentation throughput for this facility is equal to:

Total Fermentation Throughput = 5,568,652 gallons x 6 cycles/year
 Total Fermentation Throughput = 33,411,912 gallons/year

CO₂ emissions due to wine fermentation in this facility are calculated as follows:

CO₂ (lb/year) = EF (lb-CO₂/1,000 gal-wine) x annual fermentation throughput (gal/year)

EF = 6303 x VF_{EtOH}¹

Where, VF_{EtOH} is the volume fraction of Ethanol in the wine (gal-ethanol/gal-wine)

¹ Per <http://www.sbcapcd.org/eng/winery/WineryCO2Calcs.pdf>

The maximum ethanol content for the tanks at this facility ranges from 17% to 23.9%. An ethanol content of 23.9% will be used to conservatively estimate the CO₂ emissions. Therefore,

$$\begin{aligned}
 \text{CO}_2 \text{ (lb/year)} &= (6303 \times 0.239) \text{ lb-CO}_2/1,000 \text{ gal-wine)} \\
 &\quad \times 33,411,912 \text{ gal-wine/year} \\
 &= 50,332,272 \text{ lb-CO}_2/\text{year} \\
 &= 25,166 \text{ tons-CO}_2/\text{year}
 \end{aligned}$$

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

PSD Major Source Determination (tons/year)							
	NO ₂	VOC	SO ₂	CO	PM	PM ₁₀	CO _{2e}
Estimated Facility PE before Project Increase	0.0	121.1	0.0	0.0	0.0	0.0	25,166
PSD Major Source Thresholds	250	250	250	250	250	250	100,000
PSD Major Source ? (Y/N)	N	N	N	N	N	N	N

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

6. Baseline Emissions (BE)

The baseline emission (BE) calculations are performed pollutant by pollutant to determine the amount of offsets required, where necessary, when the SSPE1 is greater than the offset threshold.

BE = Pre-project Potential to Emit for:

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

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.22.

Clean Unit Determination for Existing Tanks under SLC

This facility is a Major Source for VOC emissions. A unit is considered clean if that unit is equipped with an emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during

the five years immediately prior to the submission of the complete application. For a facility with an SLC, all units in the SLC must be clean in order for emission units under the SLC to be considered clean. It was determined in District Project N-1100320 that tanks N-96-4 through N-96-323 are clean. Furthermore, tanks N-96-329 through N-96-351 triggered BACT in the previous project and are also considered to be clean. Thus, and existing tanks under the SLC are clean emission units.

$$BE_{SLC} = PE1_{SLC}$$

7. SB288 Modification

Pursuant to the 2/8/11 version of the District's Draft Major Modification Policy, calculations for determining whether an SB288 modification is triggered are performed as follows for new units:

$$NEI = \sum(PE2 - \text{Historical Actual Emissions})$$

For new units, each units potential to emit is equal to the post project potential to emit for the unit, while the historical actual emissions are equal to zero.

Winery tanks do not operate independently of one another. Therefore, potential emissions from a collection of tanks is not equal to the sum of the maximum potential to emit from each tank, which was calculated earlier. The potential to emit for the tanks was calculated and summarized in Appendix V, Federal Major Modification calculations. Based on those calculations, the collective PE2 for these tanks is:

$$\begin{aligned}\sum PE2 &= \text{Project Fermentation Emissions} + \text{Project Storage Emissions} \\ \sum PE2 &= 8,246 \text{ lb-VOC/year} + 2,267 \text{ lb-VOC/year} \\ \sum PE2 &= 10,513 \text{ lb-VOC/year}\end{aligned}$$

$$\sum HAE = 0 \text{ lb-VOC/year}$$

Thus,

$$\begin{aligned}NEI &= 10,513 \text{ lb-VOC/year} - 0 \text{ lb-VOC/year} \\ NEI &= 10,513 \text{ lb-VOC/year}\end{aligned}$$

Since the NEI is less than the SB288 Modification threshold of 50,000 lb-VOC/year, this project does not trigger an SB288 Modification.

8. Federal Major Modification

Federal Major Modification calculations are included in Appendix V. As shown in Appendix V, the net emission increase is greater than 0. Therefore, this project triggers a Federal Major Modification. As a result, BACT is triggered for VOC emissions for all emission units in this project and a public notice is required.

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

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

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

As determined in Section VII.D.4 of this document, this facility is not an existing PSD Major Source. Therefore, the project potential to emit from the new units is compared to the PSD major source thresholds to determine if the project is subject to the requirements of Rule 2410.

The facility has a SLC of 121.1 tons-VOC/year for wine fermentation and storage operations. The facility is not proposing any changes to this limit with the addition of the eight new tanks under this project. Thus, the project does not result in an increase in VOC emissions.

As proposed earlier in this document, the total capacity of the eight new tanks is 496,000 gallons, and per the facility's proposal, there is a maximum of six fermentation cycles per year for each tank. Therefore, the maximum fermentation throughput for the 8 new tanks is equal to 2,976,000 gallons per year (496,000 gal x 6 cycles/year).

CO₂ emissions due to wine fermentation in the eight new tanks are calculated as follows:

$$\text{CO}_2 \text{ (lb/year)} = \text{EF (lb-CO}_2\text{/1,000 gal-wine)} \times \text{annual fermentation throughput (gal/year)}$$

$$\text{EF} = 6303 \times \text{VF}_{\text{EtOH}}$$

Where, VF_{EtOH} is the volume fraction of Ethanol in the wine (gal-ethanol/gal-wine), which is 23.9%.

$$\begin{aligned} \text{CO}_2 \text{ (lb/year)} &= (6303 \times 0.239) \text{ lb-CO}_2/1,000 \text{ gal-wine} \times 2,976,000 \text{ gal-wine/year} \\ &= 4,483,097 \text{ lb-CO}_2/\text{year} \\ &= 2,242 \text{ tons-CO}_2/\text{year} \end{aligned}$$

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

PSD Major Source Determination: Potential to Emit (tons/year)							
	NO2	VOC	SO2	CO	PM	PM10	CO2e
Total PE from New Units	0	0	0	0	0	0	2,242
PSD Major Source Thresholds	250	250	250	250	250	250	100,000
New PSD Major Source ? (Y/N)	N	N	N	N	N	N	N

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

10. Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. QNEC calculations are included in Appendix VI.

VIII. COMPLIANCE

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

BACT requirements shall be triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless exempted pursuant to Section 4.2, BACT shall be required for the following actions:

- Any new emissions unit or relocation from one Stationary Source to another of an existing emissions unit with a Potential to Emit (PE₂) exceeding 2.0 pounds in any one day;

- Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding 2.0 pounds in any one day;
- Any new or modified emissions unit, in a stationary source project, which results in a Major Modification, as defined in this rule.

These units only emit VOC's. Thus, BACT can only be triggered for VOC emissions. Daily emissions for each new unit is greater than 2.0 lb-VOC/day. Furthermore, this project triggers a Federal Major Modification. Thus, BACT is triggered for VOC emissions for each winery tank.

Wine Storage Tanks

BACT Guideline 5.4.13 is applicable to wine storage tanks. Pursuant to the "Top-Down BACT Analysis" in Appendix II of this document, BACT has been satisfied with the following:

VOC: Insulated tank, pressure/vacuum valve set within 10% of the maximum allowable working pressure of the tank, "gas tight" tank operation and continuous storage temperature not exceeding 75°F, achieved within 60 days of completion of fermentation.

The following conditions will be included on the Authority to Construct permits:

- *When used for wine storage, this tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694]*
- *When this tank is used for wine storage, the pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694]*
- *The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694]*

Wine Fermentation Tanks:

BACT Guideline 5.4.14 is applicable to wine storage tanks. Pursuant to the "Top-Down BACT Analysis" in Appendix III of this document, BACT has been satisfied with the following:

VOC: Open tank vented to the atmosphere with the average fermentation temperature not exceeding 95 °F.

The following conditions will be included on the Authority to Construct permits:

- *The average fermentation temperature of each batch of must fermented in this tank shall not exceed 95 degrees Fahrenheit, calculated as the average of all temperature measurements for the batch taken at least every 12 hours over the course of the fermentation. [District Rule 2201]*
- *For each batch of must fermented in this tank, the operator shall record the fermentation completion date, the total gallons of must fermented, the average fermentation temperature and the uncontrolled fermentation emissions and any fermentation emission reductions (calculated per the emission factors given in District Rule 4694). The information shall be recorded by the tank Permit to Operate number and by wine type, stated as either red wine or white wine. [District Rules 2201 and 4694]*

B. Offsets

1. Offset Applicability

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post-project Stationary Source Potential to Emit (SSPE2) equals to or exceeds the offset threshold levels in Table 4-1 or Rule 2201.

Pollutant	SSPE2 (lb/yr)	Offset Thresholds (lb/yr)	Offsets Triggered?
VOC	242,165	20,000	Yes

2. Quantity of Offsets Required

This facility's total VOCs are above the offset threshold of 20,000 pounds per year. Therefore, offset calculations are required for this project.

Section 4.7.1 states that for pollutants with SSPE1 greater than the emission offset threshold levels, emission offsets shall be provided for all increases in Stationary Source emissions, calculated as the differences of post-project Potential to Emit (PE2) and the Baseline Emissions (BE) of all new and modified emissions units, plus all increases in Cargo Carrier emissions. Thus,

$$EOQ = \Sigma(PE2 - BE) + ICCE, \text{ where}$$

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

BE = Baseline Emissions (lb/yr)

ICCE = Increase in Cargo Carrier emissions (lb/yr)

There is no increase in Cargo Carrier emissions from this project. Additionally, this facility is subject to an SLC for VOC emissions. Thus,

$$EOQ = \Sigma(PE2_{SLC} - BE_{SLC})$$

The existing tanks, when operated in wine storage or fermentation mode, are Clean Emission Units since they meet the achieved-in-practice BACT requirements for wine storage and fermentation process. Thus, BE is set equal to PE1 for each tank.

$$EOQ = \Sigma(PE2_{SLC} - PE1_{SLC})$$

Both pre-project and post-project VOC emissions from the facility's fermentation and storage operations are limited to 242,165 pounds per year. Therefore,

$$\begin{aligned} EOQ &= PE2_{SLC} - PE1_{SLC} \\ &= 242,165 \text{ lb-VOC/yr} - 242,165 \text{ lb-VOC/yr} \\ &= 0 \text{ lb-VOC/yr} \end{aligned}$$

Therefore, the quantity of offsets required for this project is equal to zero.

C. Public Notification

1. Applicability

Public noticing is required for:

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

a. New Major Source

New Major Sources are new facilities, which are also Major Sources. As shown in Section VII.C.5 above, this facility is already a Major Source of VOC emissions. Therefore, this is not a New Major Source.

b. Major Modification

As demonstrated earlier, this project triggers a Federal Major Modification. Therefore, a public notice is required for these purposes.

c. New Units with PE > 100 lb/day

Each of the winery tanks has a PE greater than 100 lb/day for VOC emissions. Therefore, a public notice is triggered.

d. Offset Threshold

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Threshold				
Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Offset Threshold Surpassed?
VOC	242,165	242,165	20,000 lb/year	No

As detailed in the previous table, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

e. SSIPE > 20,000 lb/year

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

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	SSPE2 (lb/year)	SSPE1 (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
VOC	246,125	246,125	0	20,000 lb/year	No

As demonstrated in the table above, a public notice is not required for SSIFE greater than 20,000 lb/year.

2. Public Notice Action

As demonstrated above, a public notice is required. Therefore, a public notice will be completed prior to issuing these Authority to Construct permits.

D. Daily Emission Limits (DELs)

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

Proposed Rule 2201 (DEL) Conditions:

The following conditions will be placed on each Authority to Construct permit:

- *The daily VOC emission rate for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of tank capacity. [District Rule 2201]*
- *The ethanol content of wine stored in this tank shall not exceed 23.9 percent by volume. [District Rule 2201]*
- *When this tank is used for wine storage, the daily tank throughput, in gallons, shall not exceed five times the maximum nominal tank capacity stated in the equipment description. [District Rule 2201]*

E. Compliance Assurance

1. Source Testing

Since, winery tank emissions are based on generally accepted emission factors, source testing is not required to demonstrate compliance.

2. Monitoring

Monitoring is not required to demonstrate compliance with Rule 2201 requirements.

3. Recordkeeping

For each storage tank, the facility will be required to keep daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, is required to be maintained along with records of the total gallons of wine contained in a tank and the maximum temperature of the stored wine.

For each batch of must fermented, the operation is required to keep records of the fermentation completion date, the total gallons of must fermented, the average fermentation temperature and the uncontrolled fermentation emissions and fermentation emission reductions (calculated per the emission factors given in District Rule 4694). The information is required to be recorded by the tank Permit to Operate number and by wine type, stated as either red wine or white wine:

In addition, separate annual records each of total red wine and total white wine produced by fermentation at this facility, based on values reported to the Alcohol and Tobacco Tax and Trade Bureau (TTB), U.S. Department of the Treasury, is required to be maintained.

These records are required to be retained on-site for a period of at least five years and made available for District inspection upon request.

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Compliance Certification

Bear Creek Winery has submitted a compliance certification. See appendix IV.

G. Alternative Siting Analysis

Section 4.15.1 of this rule requires sources for which an analysis of alternative sites, sizes, and production processes is required under Section 173 of the Federal Clean Air Act, the applicant shall prepare an analysis functionally equivalent to the requirements of Division 13, Section 21000 et. seq. of the Public Resources Code.

This proposed project will be installed at an existing winery with more than 450 existing wine processing tanks, located in a rural area of San Joaquin County. The area is a long-established grape-growing and processing region and a number of wineries are present in the immediate area. The existing facility is vertically integrated to receive bulk truck shipments of grapes, crush and press the grapes, ferment the juice to wine, and perform post fermentation processing to produce finished wine. To support these various operations the facility features a large amount of support equipment, services and structures such as raw material receiving stations, crushers, pumps and piping, filtering

and refrigeration units, electric and natural gas utilities, warehouses, laboratories, shipping facilities and administration buildings.

The applicant proposes to install eight new winery tanks. The existing plant infrastructure and processing equipment including the crushing and pressing equipment are adequately sized to support operation of the proposed post project tank population. Installation of the project at an alternate site would not be practical or feasible based on:

- Since wine tanks operate synergistically in post-fermentation processing and blending, the potential production capacity of the new tanks could not be fully met by installing the new tanks at an alternate location.
- Use of an alternate project site would require installation of a complete new plant infrastructure and supporting processes and equipment to support the independent operation, thus duplicating the infrastructure already present at the existing plant. Construction of the project at an alternate site would be expected to produce a significantly greater environmental impact due to both 1) a much larger initial construction project and 2) incrementally larger on-going emissions and other impacts due to operation of redundant infrastructure and support systems as well as emissions associated with product transportation required to achieve some degree of integration with the existing facility.

H. Ambient Air Quality Analysis

An Ambient Air Quality Analysis is typically performed for projects that trigger a public notice; however, there is no Ambient Air Quality Standard for VOC and CO₂ emissions. This project only involves units that emit VOC and CO₂; therefore, an Ambient Air Quality Analysis is not required for this project.

District Rule 2410 Prevention of Significant Deterioration

The provisions of this rule shall apply to any source and the owner or operator of any source subject to any requirements under Title 40 Code of Federal Regulations (40 CFR) Part 52.21 as incorporated into this rule.

As demonstrated in Section VII.D.9 of this document, the proposed project is not subject to the requirements of Rule 2410; therefore no further discussion is required.

Rule 2520 Federally Mandated Operating Permits

Bear Creek Winery possesses a Title V permit. The proposed project is considered a Significant Modification to the Title V permit since this project triggers a Federal Major Modification under Rule 2201. Therefore, the following conditions will be listed on each permit:

- *{1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201]*
- *{1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4]*

In accordance with Rule 2520, the application meets the procedural requirements of section 11.4 by including:

- A description of the change, the emissions resulting from the change, and any new applicable requirements that will apply if the change occurs and
- The source's suggested draft permit (Appendix I of this document) and
- Certification by a responsible official that the proposed modification meets the criteria for use of major permit modification procedures and a request that such procedures be used (Appendix IV of this document)

Section 5.3.4 of this rule requires the permittee shall file an application for administrative permit amendments prior to implementing the requested change except when allowed by the operational flexibility provisions of section 6.4 of this rule.

Bear Creek Winery is expected to notify the District by filing TV Form-008 upon implementing the ATCs. Therefore, compliance with the requirements of this Rule is expected.

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. However, no subparts of 40 CFR Part 60 apply to wine fermentation and storage tank operations.

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 wine fermentation and storage tank operations.

Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants, which could cause injury, detriment, nuisance or annoyance to the public. The following condition will be placed on each permit:

- *No air contaminant shall be released into the atmosphere, which causes a public nuisance. [District Rule 4102]*

California Health & Safety Code 41700 - Health Risk Assessment

District Policy APR 1905 - Risk Management Policy for Permitting New and Modified Sources 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.

Ethanol (VOC) and CO₂ are not hazardous air pollutants (HAP) as defined in Section 44321 of the California Health and Safety Code. Therefore, health risk assessment is not necessary.

Compliance is expected with this Rule.

Rule 4694 Wine Fermentation and Storage Tanks

The purpose of this rule is to reduce emissions of volatile organic compounds (VOC) from the fermentation and bulk storage of wine, or achieve equivalent reductions from alternative emission sources. This rule is applicable to all facilities with fermentation emissions in excess of 10 tons-VOC/year. The storage tank provisions of Section 5.2 of this rule apply only to tanks with capacity in excess of 5,000 gallons and that are not constructed out of concrete or wood.

Section 5.1 requires the winery operator achieve Required Annual Emissions Reductions (RAER) equal to at least 35% of the winery's Baseline Fermentation Emissions (BFE). Per the definition of RAER in Section 3.25 of the Rule, the RAER may be achieved by any combination of Fermentation Emission Reductions (FER), Certified Emission Reductions (CER) or District Obtained Emission Reductions (DOER) as established in the facility's District-approved Rule 4694 Compliance Plan, due every three years on December 1st beginning in 2006. The facility has submitted the required plan to the District and is currently satisfying the required emission reductions in the form of Certified Emission Reductions.

Section 5.2 places specific restrictions on wine storage tanks with 5,000 gallons or more in capacity when such tanks are not constructed of wood or concrete. Section 5.2.1 requires these tanks to be equipped and operated with a pressure-vacuum relief valve meeting all of the following requirements:

- The pressure-vacuum relief valve shall operate within 10% of the maximum allowable working pressure of the tank,
- The pressure-vacuum relief valve shall operate in accordance with the manufacturer's instructions, and
- The pressure-vacuum relief valve shall be permanently labeled with the operating pressure settings.
- The pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21.

All of the proposed tanks are larger than 5,000 gallons and constructed out of stainless steel. Thus, the following conditions will be included on each Authority to Construct permit:

- *When used for wine storage, this tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694]*
- *When this tank is used for wine storage, the pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21 [District Rules 2201 and 4694]*

Section 5.2.2 requires that the temperature of the stored wine be maintained at or below 75° F.

The following condition will be included on each Authority to Construct permit:

- *The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694]*

Section 6.1 and 6.2 require the facility to submit a Three-Year Compliance Plan and a Three-Year Compliance Plan Verification respectively. Section 6.3 requires that an Annual Compliance Plan Demonstration be submitted to the District no later than February 1 of each year to show compliance with the applicable requirements of the Rule. Section 6.4 requires that records required by this rule be maintained, retained on-site for a minimum of five years, and made available to the APCO upon request. Section 6.4.3 requires that all monitoring be performed for any Certified Emission Reductions as identified in the facility's Three-Year Compliance Plan and that the records of all monitoring be maintained.

Section 6.4.1 requires that records be kept for each fermentation batch. The following condition will be included on each Authority to Construct permit:

- *For each batch of must fermented in this tank, the operator shall record the fermentation completion date, the total gallons of must fermented, the average fermentation temperature and the uncontrolled fermentation emissions and fermentation emission reductions (calculated per the emission factors given in District Rule 4694). The information shall be recorded by the tank Permit to Operate number and by wine type, stated as either red wine or white wine. [District Rules 2201 and 4694]*

Section 6.4.2 requires that weekly records be kept of wine volume and temperature in each storage tank. Therefore, the following conditions will be included on each Authority to Construct permit:

- *When this tank is used for wine storage, daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 2201 and 4694]*
- *When this tank is used for wine storage, the operator shall record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rules 2201 and 4694]*

Section 6.4.3 requires that all monitoring be performed for any Certified Emission Reductions as identified in the facility's Three-Year Compliance Plan and that the records of all monitoring be maintained.

Compliance is expected with this Rule.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.

- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The District performed an Engineering Evaluation (this document) for the proposed project and determined that the project will occur at an existing facility and the project involves negligible or no expansion of the existing use. Furthermore, the District determined that the project will not have a significant effect on the environment. The District finds that the project is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline §15301 (Existing Facilities), and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

IX. RECOMMENDATION

Compliance with all applicable regulations is expected. Therefore, issuance of the ATCs is recommended upon addressing comments from the public, EPA, CARB, and the applicant.

X. BILLING INFORMATION

There is no change to the annual permit fees for the existing tanks. The new tanks billing information is summarized below.

Permit Number	Fee Schedule	Fee Description	Previous Fee Schedule
N-96-352-0 through -359-0	3020-05-D	62,000 gal	None

APPENDICES

- Appendix I: Draft ATC Permits
- Appendix II: BACT Guideline 5.4.13 and Top-Down BACT Analysis
- Appendix III: BACT Guideline 5.4.14 and Top-Down BACT Analysis
- Appendix IV: Compliance Certification
- Appendix V: Federal Major Modification Calculations
- Appendix VI: Quarterly Net Emissions Change Calculations

Appendix I
Draft ATC Permits

Note: The permit conditions and equipment description for all eight draft ATC's are identical. Therefore, only one representative ATC has been included in this section.

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: N-96-352-0

LEGAL OWNER OR OPERATOR: BEAR CREEK WINERY
MAILING ADDRESS: 11900 N FURRY RD
LODI, CA 95240

LOCATION: 11900 N FURRY RD
LODI, CA 95240

EQUIPMENT DESCRIPTION:
62,000 GALLON STAINLESS STEEL WHITE/RED WINE FERMENTATION AND STORAGE TANK (TANK #621) WITH PRESSURE/VACUUM VALVE AND INSULATION

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. The daily VOC emission rate for fermentation shall not exceed 3.46 lb/1,000 gallons. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The average fermentation temperature of each batch of must fermented in this tank shall not exceed 95 degrees Fahrenheit, calculated as the average of all temperature measurements for the batch taken at least every 12 hours over the course of the fermentation. [District Rule 2201] Federally Enforceable Through Title V Permit
6. When used for wine storage, this tank shall be equipped with and operated with a pressure-vacuum relief valve, which shall operate within 10% of the maximum allowable working pressure of the tank, operate in accordance with the manufacturer's instructions, and be permanently labeled with the operating pressure settings. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DRAFT

DAVID WARNER, Director of Permit Services

N-96-352-0 : Mar 21 2010 9:30AM - HARADERJ : Joint Inspection NOT Required

7. When this tank is used for wine storage, the pressure-vacuum relief valve and storage tank shall remain in a gas-tight condition, except when the operating pressure of the tank exceeds the valve set pressure. A gas-tight condition shall be determined by measuring the gas leak in accordance with the procedures in EPA Method 21. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
8. The temperature of the wine stored in this tank shall be maintained at or below 75 degrees Fahrenheit. The temperature of the stored wine shall be determined and recorded at least once per week. For each batch of wine, the operator shall achieve the storage temperature of 75 degrees Fahrenheit or less within 60 days after completing fermentation, and shall maintain records to show when the required storage temperature of 75 degrees Fahrenheit or less was achieved. [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
9. The ethanol content of wine stored in this tank shall not exceed 23.9 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
10. When this tank is used for wine storage, the daily tank throughput, in gallons, shall not exceed five times the maximum nominal tank capacity stated in the equipment description. [District Rule 2201] Federally Enforceable Through Title V Permit
11. For each batch of must fermented in this tank, the operator shall record the fermentation completion date, the total gallons of must fermented, the average fermentation temperature and uncontrolled fermentation emissions and fermentation emission reductions (calculated per the emission factors given in District Rule 4694). The information shall be recorded by the tank Permit to Operate number and by wine type, stated as either white wine or red wine. [District Rule 4694]
12. When this tank is used for wine storage, the operator shall record, on a weekly basis, the total gallons of wine contained in the tank and the maximum temperature of the stored wine. [District Rule 4694]
13. When this tank is used for wine storage, daily throughput records, including records of filling and emptying operations, the dates of such operations, a unique identifier for each batch, the volume percent ethanol in the batch, and the volume of wine transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
14. Annual emissions from all wine fermentation and storage tanks, calculated on a twelve month rolling basis, shall not exceed the following limit: VOC - 242,165 lb/year. [District Rule 2201] Federally Enforceable Through Title V Permit
15. Total annual VOC emissions from wine fermentation operations shall be determined by the following formula: Total annual VOC emissions = (Total Annual Red Wine Production - gallons) x (6.2 lb-VOC/1,000 gallons) + (Total Annual White Wine Production - gallons) x (2.5 lb-VOC/1,000 gallons). [District Rule 2201] Federally Enforceable Through Title V Permit
16. Records of total annual fermentation and total annual storage emissions, including calculation methods and parameters used, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from wine storage operations shall be determined as the sum of the product of the volume of wine transferred in each wine movement and the batch-specific wine storage VOC emission factor calculated using the equation specified within this permit. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The batch-specific wine storage VOC emission factor (EF), in pounds of VOC per 1,000 gallons of wine throughput, shall be calculated using the following equation: $EF = 1.705259 * P^{1.090407}$, where P is the volume percent ethanol of the wine being transferred. [District Rule 2201] Federally Enforceable Through Title V Permit
19. The permittee shall maintain the following records: red wine and white wine produced by fermentation at this facility, based on values reported to the Alcohol and Tobacco Tax and Trade Bureau (TTB), U.S. Department of the Treasury; the volume and the ethanol concentration of each wine movement; and the calculated 12 month rolling VOC emission rate (lb-VOC per 12 month rolling period, calculated monthly). [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

20. If the emissions calculated for any rolling 12-month period exceed the annual emissions limitations of this permit, in a crush season in which the start of the crush season (defined as the day on which the facility's seasonal crushing/fermentation operations commence) occurs less than 365 days after the start of the previous crush season, then no violation of the annual emissions limit for that rolling 12-month period will be deemed to have occurred so long as the calendar year emissions are below the annual emissions limitation. [District Rule 2201] Federally Enforceable Through Title V Permit
21. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201] Federally Enforceable Through Title V Permit
22. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rules 1070, 2201 and 4694] Federally Enforceable Through Title V Permit

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Appendix II
BACT Guideline 5.4.13 and Top-Down BACT Analysis

[Per » B A C T » Bact Guideline.asp?category Level1=5&category Level2=4&category Level3=13&last Update=10 » 6 :](#)

Back

**Best Available Control Technology (BACT) Guideline 5.4.13
Last Update: 10/6/2009**

Wine Storage Tank

Pollutant	Achieved in Practice or In the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	1. Insulation or Equivalent**, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank; "gas-tight" tank operation; and continuous storage temperature not exceeding 75 degrees F, achieved within 60 days of completion of fermentation.	1. Capture of VOCs and thermal or catalytic oxidation or equivalent (98% control) 2. Capture of VOCs and carbon adsorption or equivalent (95% control) 3. Capture of VOCs and absorption or equivalent (90% control) 4. Capture of VOCs and condensation or equivalent (70% control)	

***Tanks made of heat-conducting materials such as stainless steel may be insulated or stored indoors (in a completely enclosed building, except for vents, doors and other essential openings) to limit exposure of diurnal temperature variations. Tanks made entirely of non-conducting materials such as concrete and wood (except for fittings) are considered self-insulating.*

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

This is a Summary Page for this Class of Source. For background information, see Permit Specific BACT Determinations on [Details Page](#).

Top-Down BACT Analysis for VOCs from Wine Storage Operations

Step 1 - Identify All Possible Control Technologies

The SJVUAPCD BACT Clearinghouse guideline 5.4.13, 2nd quarter 2012, identifies the following control equipment options for VOC emissions.

- 1) Insulation or Equivalent, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank; "gas-tight" tank operation; and continuous storage temperature not exceeding 75 degrees F, achieved within 60 days of completion of fermentation.
- 2) Capture of VOCs and thermal or catalytic oxidation or equivalent (98% control)
- 3) Capture of VOCs and carbon adsorption or equivalent (95% control)
- 4) Capture of VOCs and absorption or equivalent (90% control)
- 5) Capture of VOCs and condensation or equivalent (70% control)

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

- 1) Capture of VOCs and thermal or catalytic oxidation or equivalent (98% control)
- 2) Capture of VOCs and carbon adsorption or equivalent (95% control)
- 3) Capture of VOCs and absorption or equivalent (90% control)
- 4) Capture of VOCs and condensation or equivalent (70% control)

Step 4 - Cost Effectiveness Analysis

The cost-effectiveness analysis will be performed based on the following items:

- Since the most cost effective approach will be achieved by installing a common control device for multiple tanks, the analysis will be based on this approach.
- The cost-effectiveness analysis will be based on a hypothetical "industry-typical" storage tank operation consisting of a battery of twelve storage tanks each with a capacity of 200,000 gallons each. Total annual throughput for the hypothetical tank battery is 19.2 million gallons per year (200,000 gallons x 12 tanks x 8 turnovers/year). Based on economies of scale, it is obvious that any control found to not be cost-effective at this level of throughput would be even less cost-effective at lower capacities.

Industry Standard

During the development of District Rule 4694, it was determined that use of pressure/vacuum valves and some level of refrigeration on wine storage tanks is a standard operation for large wineries in the San Joaquin Valley. Additionally, all storage tanks are insulated. This was directly confirmed with four large wineries: Mission Bell (Madera), Gallo-Livingston, Bronco, and Robert Mondavi. Based on this, the wine storage tank VOC control requirements of District Rule 4694 and tank insulation are also determined to be "industry standard". The emission factor for "industry standard" operation is determined based on Table 1 of the District's FYI-114, Estimating Emissions from Wine Storage Tanks for an insulated storage tank.

EF (industry standard) = 0.235 lb-VOC/1000 gal of wine throughput (23.9% alcohol vol.)

Uncontrolled emissions for Twelve-Tank Battery

$$\begin{aligned} &= (19.2 \times 10^6 \text{ gal/year}) \times (0.235 \text{ lb-VOC/1000 gal}) \\ &= 4,512 \text{ lb/year} \end{aligned}$$

Capture of VOCs with Thermal or Catalytic Oxidation/ Carbon Adsorption/Absorption or Condensation

A common feature of all of these options is that they require installation of a collection system for delivering the VOCs from the tanks to the common control device. The analysis below indicates that these options are not cost effective by showing that just the annualized direct cost for the ductwork of the collection system and supporting structural steel and foundations alone is too large, when considered at the District's cost effectiveness threshold for VOC BACT, to justify the capital investment required by these options. This approach ignores additional major costs for the actual control device and its installation and for equipment sterilization systems for ductwork and control device, instrumentation and control systems for isolation of individual tanks in the battery, site specific factors due to limited plot space (known to be a significant factor at all wineries), and operating and maintenance costs for each system. Should all these additional cost factors be included, the calculated cost effectiveness would be substantially higher than indicated the table in this section.

Emission Reductions

Thermal or catalytic oxidation technology is capable of reducing 98% of VOC emissions while the remaining options under consideration have lesser control efficiencies. Showing that all of the options under consideration are not cost effective at a 98% reduction level based on capital investment requirements of ductwork and steel alone is adequate since options other than thermal/catalytic oxidation would be even less cost effective at their actual (lower) reduction levels.

$$\begin{aligned} &= 4,512 \text{ lb-VOC/year} \times 0.98 \\ &= 4,422 \text{ lb-VOC/year} \\ &= 2.2 \text{ tons-VOC/year} \end{aligned}$$

Capital Investment for Installation of a VOC Collection System

Design and Estimate Basis:

- The basis and approach for the capital cost estimate for ductwork and support steel is summarized in the following table.
- The collection system consists of stainless steel plate ductwork (stainless steel is required due to cleanliness and sterilization requirements for wine quality considerations and due to the food grade product status) with isolation valving, connecting twelve 200,000 gallon tanks to a common manifold system which ducts the combined vent to the common control device. The cost of dampers and isolation valving, installed in the ductwork, will not be included in the cost estimate.
- A minimum duct size is established at 6 inches diameter at each tank to ensure minimal backpressure of the tank during filling operations and to provide adequate strength for spanning between supports. The main header is 12" diameter to handle the potential for simultaneously venting all tanks based on a potential fill rate of 1000 gpm for each tank (typical) and a duct velocity of 2000 feet per minute.
- The ductwork is designed with features to facilitate clean-in-place (CIP) operation to allow for periodic sterilization procedures as required for food grade products. The CIP system includes strategically placed spray nozzles on the ductwork for injecting sterilizing solutions into the system. Cost impacts to install CIP systems to clean the ducting are not included in the cost estimate.
- The ductwork is supported on a structural steel pipe rack mounted on drilled concrete piers, running through the new tank battery. Ducting elevations are established to allow continuous free draining to the separator located at the control device.
- Unit Installed Costs for Ductwork: A direct cost estimate for 12" diameter stainless steel ductwork, installed in a San Joaquin Valley winery, was taken from a study prepared by Eichleay Engineering for the Wine Institute in conjunction with development of District Rule 4694.² The estimate is based on 2nd quarter 2005 dollars, and includes fittings, miscellaneous duct supports and other materials plus field labor costs required to install the ductwork, but does not include other associated indirect costs such as construction management, engineering, owner's cost, contingency, etc. BACT Attachment 1 presents the development of unit installed costs for stainless steel ducting based on the costs derived from the Eichleay estimate.
- A linear foot of ducting required was extracted from the Eichleay Estimate for a similar system at Gallo-Livingston (See BACT Attachment 1 in project C1090293).

² Eichleay Engineers of California, Fermenter VOC Emissions Control Cost Estimate (Revision 1), Eichleay Project Numbers 30892 and 30913, June 30, 2005

- Costs for structural steel supports and foundations were extracted from the Eichleay Estimate for a similar system at Gallo-Livingston (See BACT Attachment 1 in project C1090293).
- Sales tax of 8% was applied to all materials.
- Indirect costs include Engineering, Construction Expense and Contractor's Fee and Contingency. Factors for these costs are taken from Peters & Timmerhaus³.
- Capital costs taken from the Eichleay estimate are 2005 dollars. These are escalated to 2011 based on 3% overall escalation per year.

Capital Investment for VOC Capture System:

The table on the following page summarizes the cost of the VOC capture system.

³ Peters & Timmerhaus, Plant Design and Economics for Chemical Engineers, 2nd Edition, McGraw-Hill, 1968, p.140.

The total capital investment is annualized over 10 years assuming 10% interest. The following formula is used to determine the annualized cost:

$$ATCI = (P) \left[\frac{(i)(1+i)^n}{(1+i)^n - 1} \right]$$

Where:

ATCI: Annualized total capital investment

P: Present value

i: Interest rate (District policy is to use 10%)

n: 10 years

$$ATCI = (\$991,970) \left[\frac{(0.1)(1+0.1)^{10}}{(1+0.1)^{10} - 1} \right] = \frac{\$161,439}{\text{yr}}$$

$$\begin{aligned} \text{Cost of Reduction (\$/ton)} &= \$161,439/\text{yr} + 2.2 \text{ tons-VOC/yr} \\ &= \$73,381/\text{ton-VOC} \end{aligned}$$

The cost of VOC reductions considering the capture system alone is more than the threshold limit of \$17,500/ton; therefore, none of the technically feasible option would be cost-effective.

Step 5 - Select BACT

The facility's proposed option of using insulated tank, pressure/vacuum valve set within 10% of the maximum allowable working pressure of the tank, "gas tight" tank operation and maintaining a continuous storage temperature of 75°F (or less) within 60 days of completion of fermentation would be the BACT for wine storage tanks.

Appendix III
BACT Guideline 5.4.14 and Top-Down BACT Analysis

[Per » B A C T » Bact Guideline.asp?category Level1=5&category Level2=4&category Level3=14&last Update=10 » 6 :](#)

[Back](#)

**Best Available Control Technology (BACT) Guideline 5.4.14
Last Update: 10/6/2009**

Wine Fermentation Tank

Pollutant	Achieved in Practice or in the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	Temperature-Controlled Open Top Tank with Maximum Average Fermentation Temperature of 95 deg F	1. Capture of VOCs and Thermal Oxidation or Equivalent (88% control) 2. Capture of VOCs and Carbon Adsorption or Equivalent (86% control) 3. Capture of VOCs and Absorption or Equivalent (81% control) 4. Capture of VOCs and Condensation or Equivalent (81% control)	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

This is a Summary Page for this Class of Source. For background information, see Permit Specific BACT Determinations on [Details Page](#).

Top-Down BACT Analysis for Fermentation Operations

Step 1 - Identify all control technologies

Achieved in Practice or contained in the SIP:

Temperature-controlled open top tank with maximum average fermentation temperature of 95°F.

Technologically Feasible:

- 1) Capture of VOCs and thermal oxidation or equivalent (88% control)
- 2) Capture of VOCs and carbon adsorption or equivalent (86% control)
- 3) Capture of VOCs and absorption or equivalent (81% control)
- 4) Capture of VOCs and condensation or equivalent (81% control)

Alternate Basic Equipment:

There is no alternate basic equipment listed on this guideline.

Step 2 - Eliminate technologically infeasible options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank remaining options by control effectiveness

- 1) Capture of VOCs and thermal oxidation or equivalent (88% control)
- 2) Capture of VOCs and carbon adsorption or equivalent (86% control)
- 3) Capture of VOCs and absorption or equivalent (81% control)
- 4) Capture of VOCs and condensation or equivalent (81% control)

Step 4 - Cost Effectiveness Analysis

In 2009, the District prepared a BACT analysis, under engineering evaluation C-1090293, for the fermentation process at wineries and evaluated the cost effectiveness analysis for each of the above mentioned technologies.

The fundamental capital and annual costs information of the above BACT analysis was extracted from a case study prepared by the Eichleay Engineering Inc. for the E & J Gallo Winery facility in 2005. The cost information from the Eichleay study along with the inflation rate of 3% per year were entered into the EPA Cost Model to estimate the cost effectiveness for each capture and control case, the summary sheets of these estimations are included in the following pages. According to this 2009 BACT analysis, the effectiveness costs for each control device are summarized below:

Control Device	Thermal Oxidizer	RTO	Refrigerated Cond.	Water Scrubber	Carbon Adsorption
Cost Effectiveness (\$/ton of VOC)	20,700	19,100	23,300	22,800	18,500

The lowest evaluated value of \$19,100/ton exceeds the District's current cost effectiveness threshold of \$17,500/ton of VOC. Therefore, none of these technologies is cost-effective, and are not required at this time.

Step 5 - Select BACT

Temperature-controlled open top tank with maximum average fermentation temperature of 95°F would be the BACT for this process.

Appendix IV
Compliance Certification

FAXED By: CR
Date: 11/20/12

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

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

I. TYPE OF PERMIT ACTION (Check appropriate box)

- SIGNIFICANT PERMIT MODIFICATION ADMINISTRATIVE AMENDMENT
 MINOR PERMIT MODIFICATION

COMPANY NAME: <u>Bear Creek Winery</u>	FACILITY ID: <u>N-96</u>
1. Type of Organization: <input type="checkbox"/> Corporation <input type="checkbox"/> Sole Ownership <input type="checkbox"/> Government <input checked="" type="checkbox"/> Partnership <input type="checkbox"/> Utility	
2. Owner's Name: <u>Kurt Kautz Managing Partner</u>	
3. Agent to the Owner: <u>Craig Rous</u>	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial all circles for confirmation):

- Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).
- Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.
- Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.
- Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

Craig Rous
Signature of Responsible Official

11/20/12
Date

Craig Rous
Name of Responsible Official (please print)

Director of Operations
Title of Responsible Official (please print)

Appendix V
Federal Major Modification Calculations

Federal Major Modification Calculations

Tanks operating in a winery are not truly independent emissions units. Therefore, the potential annual emissions must be established with consideration of all the other associated tanks in the facility. The potential to emit from the new tanks (PE_{2N}) is therefore determined as the difference between the post project and the pre project potential emissions from the wine production operation based on the collective physical capacity of the processing equipment at the facility.

1. Potential to Emit (existing tanks)

The potential annual VOCs from fermentation and storage operations at this winery are determined as follows:

White Wine Fermentation

White wine production capacity is determined as the lesser of the production capacities of either the crushing or pressing equipment or wine fermentation tanks at the facility:

W_W = White wine production capacity (gallons per year as measured immediately after pressing) is the lesser of the following calculations:

$$\begin{aligned} W1 &= C \times D_w \times M \text{ (limited by crusher capacity)} \\ W2 &= P \times D_w \times M \text{ (limited by pressing capacity)} \\ W3 &= (V_{FW} \times F_w \times D_w) / W_{FW} \text{ (limited by white fermenter volume)} \\ W4 &= (V_T \times D_w) / R_{TW} \text{ (limited by overall tank processing)} \end{aligned}$$

Where,

$$\begin{aligned} C &= \text{grape crushing capacity} \\ &= 4,320 \text{ tons/day (Source: Project N-1100320)} \\ D_w &= \text{days in a white wine crush season} \\ &= 120 \text{ days (Source: Project N-1100320)} \\ M &= \text{amount of juice produced per ton of grapes crushed} \\ &= 200 \text{ gal/ton (Source: Project N-1100320)} \\ F_w &= \text{White wine fill factor} \\ &= 0.95 \text{ (Source: Project N-1100320)} \\ P &= \text{pressing capacity} \\ &= 2,592 \text{ tons/day (Source: Project N-1100320)} \\ W_{FW} &= \text{white fermentation period} \\ &= 10 \text{ days (Source: Project N-1100320)} \\ R_{TW} &= \text{total winery retention time for white wine} \\ &= 40 + 10 \\ &= 50 \text{ days (Source: Project N-1100320)} \\ V_{FW} &= \text{total volume of white wine fermenters} \\ &= 2,449,580 \text{ gal (Source: Project N-1100320)} \end{aligned}$$

V_T = total winery cooperage
= 12,042,483 gal (Source: Project N-1100320)

Using the above parameters,

W_1 = 103.68 MG/year
 W_2 = 62.21 MG/year
 W_3 = 27.93 MG/year
 W_4 = 28.90 MG/year
 W_W = W_3 (lesser of W_1 , W_2 , W_3 , W_4)
= 27.93 MG/year

The potential white wine fermentation emissions would be:

$$PE1_{white} = E_{fw} \times W_W$$

Where:

E_{fw} = white wine emission factor annual basis
= 2.5 lb-VOC/1,000 gal (Source: District FYI-114)

$$PE1_{white} = (2.5 \text{ lb-VOC/1,000 gal}) \times (27.93 \times 10^6 \text{ gal/yr})$$
$$= 69,825 \text{ lb-VOC/year}$$

White Wine Storage Emissions:

Storage emissions are calculated as follows:

$$PE1_{white} = E_s \times T \times W_w$$

Where,

E_s = 0.213 lb-VOC/1,000 gal, per District FYI-114 for 23.9% alcohol by volume (rounded to 24% for calculation purposes), all existing storage tanks are permitted to store up to 23.9% alcohol by volume

T = total post fermentation inter-tank transfers per batch of wine
= 8

W_w = 27.93 MG/year (determined above)

$$PE1_{white} = (0.213 \text{ lb-VOC/1,000 gal}) \times (8) \times (27.93 \times 10^6 \text{ gal/year})$$
$$= 47,593 \text{ lb-VOC/year}$$

Total PE for White Wine Production:

Potential emissions from 100% white wine production scenario are then determined as follows:

$$\begin{aligned} PE_{1\text{white}} &= PE_{1\text{white fermentation}} + PE_{1\text{white storage}} \\ &= 69,825 \text{ lb-VOC/year} + 47,593 \text{ lb-VOC/year} \\ &= 117,418 \text{ lb-VOC/year} \end{aligned}$$

Red Wine Fermentation Emissions:

Red wine production capacity is determined as the lesser of the production capacities of either the crushing, pressing or tank capacity.

W_R = Red wine production capacity (gallons per year as measured immediately after pressing) and is the lesser of the following four calculations:

$$\begin{aligned} W1 &= C \times D_r \times M \text{ (limited by crusher capacity)} \\ W2 &= P \times D_r \times M \text{ (limited by pressing capacity)} \\ W3 &= (V_{FR} \times F \times D_r) / R_{FR} \text{ (limited by red fermenter volume)} \\ W4 &= (V_T \times D_r) / R_{TS} \text{ (limited by overall tank processing)} \end{aligned}$$

Where,

C	= grape crushing capacity = 4,320 tons/day
D_r	= days in a red wine crush season = 120 days (Source: Project N-1100320)
F	= Fill factor for red wine fermentation = 80% (Source: Project N-1100320)
M	= amount of juice produced per ton of grapes crushed = 200 gal/ton
P	= pressing capacity = 5,184 tons/day (Source: Project N-1100320)
R_{FR}	= red fermentation period = 5 days (Source: Project N-1100320)
R_{TS}	= total winery retention time for red wine, = 40 + 5 = 45 days (Source: Project N-1100320)
V_{FR}	= total volume of red wine fermenters = 3,119,072 gal (Source: Project N-1100320)
V_T	= total winery cooperage = 12,042,483 gal (Source: Project N-1100320)

Using the above parameters,

$$W1 = 103.68 \text{ MG/year}$$

$$W2 = 124.42 \text{ MG/year}$$

$$W3 = 59.89 \text{ MG/year}$$

$$W4 = 32.11 \text{ MG/year}$$

$$\begin{aligned} W_R &= W4 \text{ (lesser of } W1, W2, W3, W4) \\ &= 32.11 \text{ MG/year} \end{aligned}$$

The potential red wine fermentation emissions would be:

$$PE1_{red} = E_{fr} \times W_R$$

Where,

$$\begin{aligned} E_{fr} &= \text{red wine emission factor} \\ &= 6.2 \text{ lb-VOC/1,000 gal (District Rule 4694)} \end{aligned}$$

$$\begin{aligned} PE1_{red} &= (6.2 \text{ lb-VOC/1,000 gal}) \times (32.11 \times 10^6 \text{ gal/yr}) \\ &= 199,082 \text{ lb-VOC/year} \end{aligned}$$

Red Wine Storage Emissions:

Storage emissions are calculated as follows:

$$PE1_{red} = E_s \times T \times W_R$$

Where:

$$\begin{aligned} E_s &= 0.213 \text{ lb-VOC/1,000 gal, per District FYI-114 for 23.9\% alcohol by volume (rounded to} \\ &\quad \text{24\% for calculation purposes), all existing storage tanks are permitted to store up to 23.9\%} \\ &\quad \text{alcohol by volume} \end{aligned}$$

$$\begin{aligned} T &= \text{total post fermentation inter-tank transfers per batch of wine} \\ &= 8 \end{aligned}$$

$$W_R = 32.11 \text{ MG/year (determined above)}$$

$$\begin{aligned} PE1_{red} &= (0.213 \text{ lb-VOC/1,000 gal}) \times (8) \times (32.11 \times 10^6 \text{ gal/yr}) \\ &= 54,715 \text{ lb-VOC/year} \end{aligned}$$

Total PE for Red Wine Production:

Potential emissions from 100% red wine production scenario are then determined as follows:

$$\begin{aligned} PE1_{red} &= PE1_{red \text{ fermentation}} + PE1_{red \text{ storage}} \\ &= 199,082 \text{ lb-VOC/year} + 54,715 \text{ lb-VOC/year} \\ &= 253,797 \text{ lb-VOC/year} \end{aligned}$$

Summary:

The facility's emissions potential for fermentation and storage operations is then taken to be the greater of the white or red emissions potential determined above.

$$\begin{aligned} PE1 &= \text{greater of } PE1_{white} \text{ and } PE1_{red} \\ &= \mathbf{253,797 \text{ lb-VOC/year}} \end{aligned}$$

2. Potential to Emit (existing plus new tanks)

The potential annual VOCs from fermentation and storage operations at this winery are determined as follows:

White Wine Fermentation

White wine production capacity is determined as the lesser of the production capacities of either the crushing or pressing equipment or wine fermentation tanks at the facility:

W_W = White wine production capacity (gallons per year as measured immediately after pressing) is the lesser of the following three calculations:

$$\begin{aligned} W1 &= C \times D_w \times M \text{ (limited by crusher capacity)} \\ W2 &= P \times D_w \times M \text{ (limited by pressing capacity)} \\ W3 &= (V_{FW} \times F \times D_w) / W_{FW} \text{ (limited by white fermenter volume)} \\ W4 &= (V_T \times D_w) / R_{TW} \text{ (limited by overall tank processing)} \end{aligned}$$

Where,

$$\begin{aligned} C &= \text{grape crushing capacity} \\ &= 4,320 \text{ tons/day} \\ D_w &= \text{days in a white wine crush season} \\ &= 120 \text{ days} \\ M &= \text{amount of juice produced per ton of grapes crushed} \\ &= 200 \text{ gal/ton} \\ F_w &= \text{White wine fill factor} \\ &= 0.95 \end{aligned}$$

P = pressing capacity
 = 2,592 tons/day
 W_{FW} = white fermentation period
 = 10 days
 R_{TW} = total winery retention time for white wine
 = 40 + 10
 = 50 days
 V_{FW} = total volume of white wine fermenters
 = 2,449,580 gal + 496,000 gal = 2,945,580 gal
 V_T = total winery cooperage
 = 12,042,483 + 496,000 = 12,538,483 gal

Using the above parameters,

W1 = 138.24 MG/year
 W2 = 129.60 MG/year
 W3 = 33.58 MG/year
 W4 = 30.10 MG/year
 W_W = W4 (lesser of W1, W2, W3, W4)
 = 30.10 MG/year

The potential white wine fermentation emissions would be:

$$PE_{2\text{white}} = E_{fw} \times W_W$$

Where:

E_{fw} = white wine emission factor
 = 2.5 lb-VOC/1,000 gal (Source: District FYI-114)

$$\begin{aligned}
 PE_{2\text{white}} &= (2.5 \text{ lb-VOC}/1,000 \text{ gal}) \times (30.10 \times 10^6 \text{ gal/yr}) \\
 &= 75,250 \text{ lb-VOC/year}
 \end{aligned}$$

White Wine Storage Emissions:

Storage emissions are calculated as follows:

$$PE_{2\text{white}} = E_s \times T \times W_w$$

Where,

E_s = 0.213 lb-VOC/1,000 gal, per District FYI-114 for 23.9% alcohol by volume (Rounded to 24% for calculation purposes), all existing and new storage tanks are permitted to store up to 23.9% alcohol by volume
 T = total post fermentation inter-tank transfers per batch of wine
 = 8

$W_w = 30.10 \text{ MG/year}$ (determined above)

$$\begin{aligned} PE_{2\text{white}} &= (0.213 \text{ lb-VOC/1,000 gal}) \times (8) \times 30.10 \times 10^6 \text{ gal/year} \\ &= 51,290 \text{ lb-VOC/year} \end{aligned}$$

Total PE for White Wine Production:

Potential emissions from 100% white wine production scenario are then determined as follows:

$$\begin{aligned} PE_{2\text{white}} &= PE_{2\text{white fermentation}} + PE_{2\text{white storage}} \\ &= 75,250 \text{ lb-VOC/year} + 51,290 \text{ lb-VOC/year} \\ &= 126,540 \text{ lb-VOC/year} \end{aligned}$$

Red Wine Fermentation Emissions:

Red wine production capacity is determined as the lesser of the production capacities of either the crushing, pressing or tank capacity.

W_R = Red wine production capacity (gallons per year as measured immediately after pressing) and is the lesser of the following four calculations:

$$\begin{aligned} W1 &= C \times D_r \times M \text{ (limited by crusher capacity)} \\ W2 &= P \times D_r \times M \text{ (limited by pressing capacity)} \\ W3 &= (V_{FR} \times F \times D_r) / R_{FR} \text{ (limited by red fermenter volume)} \\ W4 &= (V_T \times D_r) / R_{TS} \text{ (limited by overall tank processing)} \end{aligned}$$

Where,

$$\begin{aligned} C &= \text{grape crushing capacity} \\ &= 4,320 \text{ tons/day} \\ D_r &= \text{days in a red wine crush season} \\ &= 120 \text{ days} \\ F &= \text{Fill factor for red wine fermentation} \\ &= 80\% \\ M &= \text{amount of juice produced per ton of grapes crushed} \\ &= 200 \text{ gal/ton} \\ P &= \text{pressing capacity} \\ &= 5,184 \text{ tons/day} \\ R_{FR} &= \text{red fermentation period} \\ &= 5 \text{ days} \\ R_{TS} &= \text{total winery retention time for red wine,} \\ &= 40 + 5 \\ &= 45 \text{ days} \\ V_{FR} &= \text{total volume of red wine fermenters} \\ &= 3,119,072 \text{ gal} + 496,000 \text{ gal} = 3,615,072 \text{ gal} \\ V_T &= \text{total winery cooperage} \\ &= 12,042,483 + 496,000 = 12,538,483 \text{ gal} \end{aligned}$$

W1 = 103.68 MG/year

W2 = 124.42 MG/year

W3 = 69.41 MG/year

W4 = 33.44 MG/year

$W_R = W4$ (lesser of W1, W2, W3, W4)
= 33.44 MG/year

The potential red wine fermentation emissions would be:

$$PE2_{red} = E_{fr} \times W_R$$

Where,

E_{fr} = red wine emission factor
= 6.2 lb-VOC/1,000 gal (District Rule 4694)

$$PE2_{red} = (6.2 \text{ lb-VOC/1,000 gal}) \times (33.44 \times 10^6 \text{ gal/yr})$$
$$= 207,328 \text{ lb-VOC/year}$$

Red Wine Storage Emissions:

Storage emissions are calculated as follows:

$$PE2_{red} = E_s \times T \times W_R$$

Where:

E_s = 0.213 lb-VOC/1,000 gal, per District FYI-114 for 23.9% alcohol by volume (Rounded to 24% for calculation purposes), all existing storage tanks are permitted to store up to 23.9% alcohol by volume

T = total post fermentation inter-tank transfers per batch of wine
= 8

W_R = 33.44 MG/year (determined above)

$$PE2_{red} = (0.213 \text{ lb-VOC/1,000 gal}) \times (8) \times (33.44 \times 10^6 \text{ gal/yr})$$
$$= 56,982 \text{ lb-VOC/year}$$

Total PE for Red Wine Production:

Potential emissions from 100% red wine production scenario are then determined as follows:

$$PE2_{red} = PE2_{red \text{ fermentation}} + PE2_{red \text{ storage}}$$
$$= 207,328 \text{ lb-VOC/year} + 56,982 \text{ lb-VOC/year}$$
$$= 264,310 \text{ lb-VOC/year}$$

Summary:

The facility's emissions potential for fermentation and storage operations is then taken to be the greater of the white or red emissions potential determined above.

$$\begin{aligned} \text{PE2} &= \text{greater of PE2}_{\text{white}} \text{ and PE2}_{\text{red}} \\ &= 513,643 \text{ lb-VOC/year} \end{aligned}$$

3. Net Emissions Increase

Net Emissions Increase Based on Physical Capacity of Wine Processing Equipment			
Category	Fermentation	Storage	Total
PE2	207,328	56,982	264,310
PE1	199,082	54,715	253,797
Net Emissions Increase	8,246	2,267	10,513

Appendix VI
Quarterly Net Emissions Change Calculations

Quarterly Net Emissions Change Calculations

For the purposes of this project,

$$\text{QNEC} = (\text{PE2}_{\text{SLC}} - \text{BE}_{\text{SLC}}) \div 4$$

As shown in Section VII.C.5, BE is equal to PE1 for all pollutants. Therefore, the equation for QNEC reduces to:

$$\text{QNEC} = (\text{PE2}_{\text{SLC}} - \text{PE1}_{\text{SLC}}) \div 4$$

The applicant did not propose any changes to the VOC SLC for this project. Therefore, PE2_{SLC} is equal to PE1_{SLC} .

Thus, QNEC is equal to zero for each unit.