



APR 21 2017

Dan Martin
E & J Gallo Winery
18000 W River Rd
Livingston, CA 95334

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: N-1237
Project Number: N-1162653

Dear Mr. Martin:

Enclosed for your review and comment is the District's analysis of E & J Gallo Winery's application for an Authority to Construct for the modification of 8 wine/distilled spirits storage tanks to add red and white wine fermentation service and establish a combined annual volatile organic compound (VOC) emission limit for the 8 tanks, at 18000 W River Rd, Livingston.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice and 45-day EPA notice comment periods, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Jesse A. Garcia of Permit Services at (559) 230-5918.

Sincerely,



Arnaud Marjollet
Director of Permit Services

AM:jag

Enclosures

cc: Tung Le, CARB (w/ enclosure) via email
cc: Gerardo C. Rios, EPA (w/ enclosure) via email
cc: Kim Burns, E & J Gallo Winery (w/enclosure) via email

Seyed Sadredin
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San Joaquin Valley Air Pollution Control District

Authority to Construct

Application Review

Modification of 8 Wine/Distilled Spirits Storage Tanks to Add Fermentation Service and Establish VOC SLC for the 8 Tanks

Facility Name:	E & J Gallo Winery	Date:	April 19, 2017
Mailing Address:	18000 W. River Road	Engineer:	Jesse A. Garcia
	Livingston, CA 95334	Lead Engineer:	Joven Refuerzo
Contact Person:	Dan Martin		
Telephone:	(209) 394-6211		
Email:	dan.martin@ejgallo.com		
Application #'s:	N-1237-776-1 through -780-1 and -783-1 through -785-1		
Project #:	N-1162653		
Deemed Complete:	September 9, 2016		

I. PROPOSAL

E & J Gallo Winery has requested Authority to Construct (ATC) permits to modify 8 wine and distilled spirits storage tanks to add the ability for these tanks to ferment red and white wine (current valid ATCs included in Appendix A).

In addition to adding fermentation service to these 8 existing wine and distilled spirits storage tanks, E & J Gallo Winery has proposed to establish a combined specific limiting condition (SLC) for VOC emissions for all wine fermentation and storage operations within these 8 tanks.

The 8 wine and distilled spirits storage tanks being modified in this project were permitted as new tanks under ATC projects N-1143697 (ATCs N-1237-776-0 through -780-0) and N-1153264 (ATCs N-1237-783-0 through -785-0) and have not been fully constructed and implemented as of the date of this document. Pursuant to information provided by E & J Gallo Winery for this project, each of the referenced tanks will be constructed and the ATCs will be implemented prior to or concurrently with the ATC permits issued in this project. Therefore, the following typical condition will be listed on each of these ATC permits to assure continued compliance (sample condition shown for unit N-1237-776-0):

- Authority to Construct (ATC) N-1237-776-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201]

E & J Gallo Winery received their Title V Permit for this stationary source on June 27, 2000. 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). But the facility has not requested that this project be processed in that manner; therefore, E & J Gallo Winery will be required to submit a Title V significant modification application and receive a revised permit prior to operating under the revised provisions of the ATCs issued with this project.

II. APPLICABLE RULES

Rule 2201 New and Modified Stationary Source Review Rule (2/18/16)
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 (2/17/05)
Rule 4102 Nuisance (12/17/92)
Rule 4623 Storage of Organic Liquids (5/19/05)
Rule 4694 Wine Fermentation and Storage Tanks (12/15/05)
California Health and Safety Code Section 41700 (Health Risk Assessment)
California Health & Safety Code Section 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

This facility is located at 18000 W. River Road in Livingston, CA.

The District has verified that the equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. PROCESS DESCRIPTION

E & J Gallo Winery produces both red and white table wines, as well as other specialty wine products, from the fermentation of grapes. During the "crush season", typically from late August to late November, both red and white grapes are received by truck and delivered to a crusher-stemmer which serves to crush the grapes and remove the stems. In the case of red wines, the resultant juice (termed "must" and containing the grape skins, pulp and seeds) is pumped to red wine fermentation tanks for fermentation, a batch process. The red wine fermentation tanks are specifically designed to ferment the must in contact with the skins and to allow the separation of the skins and seeds from the wine after fermentation. In the case of white wines, the must is first sent to screens and presses for separation of grape skins and seeds prior to fermentation. After separation of the skins and seeds, the white must is transferred to a fermentation tank. White wine fermentation can be carried out in a tank without design provisions for solids separation since the skins and seeds have already been separated.

After transfer of the must (red or white) to the fermentation tank, the must is inoculated with yeast which initiates the fermentation reactions. During fermentation, the yeast metabolizes the sugar in the grape juice, converting it to ethanol and carbon dioxide and releasing heat. Although fermentation temperatures vary widely depending upon the specific quality and style of the wine, temperature is typically controlled 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 fermentation mass is measured in °Brix (weight %) and is typically 22-26° for unfermented grape juice, dropping to 4° or less for the end of fermentation. Finished ethanol concentration is approximately 10 to 14 percent by volume. Batch fermentation requires 3-5 days per batch for red wine and 1-2 weeks per batch for white wine. VOCs are emitted during the fermentation process along with the CO₂. The VOCs consist primarily of ethanol along with minor fermentation byproducts.

Following the completion of fermentation, white wine is transferred directly to storage tanks. Red wine is first directed to the presses for separation of solids and then routed to the storage tanks. All tanks in the winery typically operate as two separate emissions units; 1) a fermentation operation during which the tank is vented directly to the atmosphere to release the evolved CO₂ byproduct from the fermentation reaction; and 2) a storage operation where the tank is closed to minimize contact with air and the contents is often refrigerated. Post-fermentation operations are conducted in the tanks including cold stabilization, racking, filtration, etc which result in a number of inter-tank transfers of the wine during this period leading up to the bottling or bulk shipment of the finished product. Storage operations are conducted year-round. VOC emissions occur primarily as a result of the inter-tank wine transfers which occur during the post fermentation operations.

V. EQUIPMENT LISTING

Pre-Project Equipment Descriptions:

- N-1237-776-0: 6,000 GALLON INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D601) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT
- N-1237-777-0: 6,000 GALLON INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D602) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT
- N-1237-778-0: 3,500 GALLON INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D301) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT
- N-1237-779-0: 3,500 GALLON INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D302) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT
- N-1237-780-0: 3,500 GALLON INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D303) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT

- N-1237-783-0: 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D603) WITH PRESSURE/VACUUM VALVE AND INSULATION
- N-1237-784-0: 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D604) WITH PRESSURE/VACUUM VALVE AND INSULATION
- N-1237-785-0: 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D201) WITH PRESSURE/VACUUM VALVE AND INSULATION

Proposed Modifications:

Modify 8 wine and distilled spirits storage tanks to add the ability for each tank to perform red and white fermentation service. In addition, create a VOC SLC for all wine fermentation and storage operations in these 8 tanks.

- N-1237-776-1: MODIFICATION OF 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D601) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3
- N-1237-777-1: MODIFICATION OF 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D602) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3
- N-1237-778-1: MODIFICATION OF 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D301) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3
- N-1237-779-1: MODIFICATION OF 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D302) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

- N-1237-780-1: MODIFICATION OF 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D303) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3
- N-1237-783-1: MODIFICATION OF 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D603) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3
- N-1237-784-1: MODIFICATION OF 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D604) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3
- N-1237-785-1: MODIFICATION OF 20,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (D201) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

Post Project Equipment Descriptions:

- N-1237-776-1: 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL RED AND WHITE WINE FERMENTATION AND WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D601) WITH PRESSURE/VACUUM VALVE AND INSULATION
- N-1237-777-1: 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL RED AND WHITE WINE FERMENTATION AND WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D602) WITH PRESSURE/VACUUM VALVE AND INSULATION
- N-1237-778-1: 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL RED AND WHITE WINE FERMENTATION AND WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D301) WITH PRESSURE/VACUUM VALVE AND INSULATION
- N-1237-779-1: 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL RED AND WHITE WINE FERMENTATION AND WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D302) WITH PRESSURE/VACUUM VALVE AND INSULATION

- N-1237-780-1: 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL RED AND WHITE WINE FERMENTATION AND WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D303) WITH PRESSURE/VACUUM VALVE AND INSULATION
- N-1237-783-1: 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL RED AND WHITE WINE FERMENTATION AND WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D603) WITH PRESSURE/VACUUM VALVE AND INSULATION
- N-1237-784-1: 20,000 GALLON NOMINAL INSULATED STAINLESS STEEL RED AND WHITE WINE FERMENTATION AND WINE AND DISTILLED SPIRITS STORAGE TANK (D201) WITH PRESSURE/VACUUM VALVE AND INSULATION
- N-1237-785-1: 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL RED AND WHITE WINE FERMENTATION AND WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D201) WITH PRESSURE/VACUUM VALVE AND INSULATION

VI. EMISSION CONTROL TECHNOLOGY EVALUATION

Wine Fermentation:

The temperature of the fermentation is controlled to maintain an average fermentation temperature not exceeding 95 °F which avoids higher temperatures that might be damaging to the yeast cells and reduces the potential for an out-of-control fermentation reaction in the tank. Temperature control serves to minimize VOC emissions relative to a tank without temperature control since the potential emissions increase with fermentation temperature.

Wine/Distilled Spirits Storage:

VOCs (ethanol) are emitted from wine/distilled spirits 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 valve limits these emissions by requiring the maximum amount of variation in tank pressure before allowing the tank to vent to the atmosphere or allowing air admission to the tank. When wine/distilled spirits storage tanks are insulated or located in a climate controlled building, breathing losses are considered to be negligible.

VII. GENERAL CALCULATIONS

A. Assumptions

- The maximum operating schedule for this facility is 24 hours/day and 365 days/year.
- VOC is the only pollutant emitted from wine fermentation and wine/distilled spirits storage tank operations.
- Winery tanks generally consist of two emissions units; 1) a fermentation tank emissions unit and 2) a wine storage tank emissions unit.
- Prior to this project, all 8 tanks within this project were authorized for wine/distilled spirits storage service only. After this project, all 8 tanks within this project will be authorized for red and white wine fermentation and wine/distilled spirits storage service.

Fermentation Operations:

- The post-project maximum daily fermentation throughput rate will be established using a worst case of one tank turnover of nominal tank capacity per day. The post-project annual fermentation throughput rates provided by the applicant for each tank are summarized in the table below:

Permits	Nominal Tank Size, (gallons)	Daily Fermentation Throughput, (gal/day)	Annual Fermentation Throughput, (gal/year)
N-1237-776	6,000	6,000	120,000
N-1237-777	6,000	6,000	120,500
N-1237-778	3,500	3,500	70,000
N-1237-779	3,500	3,500	70,000
N-1237-780	3,500	3,500	70,000
N-1237-783	6,000	6,000	120,000
N-1237-784	6,000	6,000	120,000
N-1237-785	20,000	20,000	400,000

Storage Operations:

- The daily and annual maximum ethanol content of stored wine/spirits is 95% for all tanks except unit N-1237-785 which is limited to 24% (per the current ATCs)
- Daily breathing losses are assumed to be negligible from the storage operations since all storage tank emissions units in this project are insulated and equipped with a pressure/vacuum relief valve.
- The pre-project daily and annual wine/distilled spirits storage throughput rates for each tank was taken from the application reviews performed under projects N-1143697 (ATCs N-1237-776-0 through -780-0) and N-1153264 (ATCs N-1237-783-0 through -785-0). The applicant is not proposing to modify the wine storage throughput rates for any of these tanks as a part of this project. Therefore, the wine storage throughput rates will be as follows:

Permits	Nominal Tank Size, (gallons)	Daily Storage Throughput, (gal/day)	Annual Storage Throughput, (gal/year)
N-1237-776	6,000	60,000	120,000
N-1237-777	6,000	60,000	120,000
N-1237-778	3,500	35,000	78,000
N-1237-779	3,500	35,000	78,000
N-1237-780	3,500	35,000	78,000
N-1237-783	6,000	6,000	220,000
N-1237-784	6,000	6,000	220,000
N-1237-785	20,000	20,000	500,000

B. Emission Factors

Per District practice for establishing VOC emission factors for wine fermentation and storage tanks located in the Northern Region, the emission factors are as follows:

Wine Fermentation Tanks:

Red Wine Fermentation:

Daily: 3.46 lb-VOC/1000 gallons of tank capacity
Annual: 6.2 lb-VOC/1000 gallons annual throughput

White Wine Fermentation:

Daily: 1.62 lb-VOC/1000 gallons of tank capacity
Annual: 2.5 lb-VOC/1000 gallons annual throughput

Wine/Distilled Spirits Storage Tanks:

The daily and annual emissions from the wine/distilled spirits stored in these tanks were previously determined using EPA's Tanks 4.0 program in Projects N-1143697 and N-1153264. The proposed project is not proposing to modify the daily or annual VOC emission factors from these wine/distilled spirits storage tanks. Therefore, no further discussion is required.

For purposes of calculating actual annual emissions, the annual data from District emissions modelling have been curve-fitted based on an equation of the form $E_f = ap^2 + bp + c$, where p = vol% ethanol. The constants for the equation are as follows:

Constants for Annual Emission Factor Correlation			
$E_f \text{ (lb-VOC/1,000 gallon)} = ap^2 + bp + c$			
p = volume percentage ethanol			
Northern Region			
Concentration Range	a	b	c
0 to 24%	-0.38194	0.97917	0
>24 to 66%	-0.42159	0.91316	0.016237
>66% to 92%	1.3799	-1.5774	0.87906
>92% to 100%	6.6071	-10.651	4.8061

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Wine/Distilled Spirits Storage Tanks:

The PE1 values for the existing wine/distilled spirits storage tanks were taken from the application reviews performed under projects N-1143697 and N-1153264 and were established using the maximum storage throughput rates and the Tanks 4.0 program. The PE1 values are summarized for each tank in the following table:

Pre-Project Potential to Emit		
Permits	Daily PE1, (lb/day)	Annual PE1, (lb/year)
N-1237-776	13.7	83
N-1237-777	13.7	83
N-1237-778	8.0	54
N-1237-779	8.0	54
N-1237-780	8.0	54
N-1237-783	6.9	143
N-1237-784	6.9	143
N-1237-785	8.3	114
Storage Tank PE1 Total:	73.5	728

Wine Fermentation Tanks:

Since these fermentation tanks are new emissions units, PE1 = 0 for all pollutants.

2. Post-Project Potential to Emit (PE2)

Wine/Distilled Spirits Storage Tanks:

The proposed project does not involve any changes to the operating schedule, emission factors, or throughput rates of the 8 wine/distilled spirits storage tanks within this project. Therefore, there will not be any changes to the VOC emissions and the post-project potential to emit values equal the daily pre-project potential to emit values listed above.

Wine Fermentation Tanks:

Daily PE2:

The maximum daily VOC emissions from these new fermentation tanks will be determined using the throughput rates listed above and the red wine emission factor as that represents the highest emission factor for fermentation operations.

Daily PE2 = Throughput Rate (gal/day) x Red Wine EF (lb-VOC/1,000 gallons)

Daily Post-Project Potential to Emit			
Permits	Max Daily Throughput, (gal/day)	Red Wine Emission Factor (lb-VOC/1,000 gal)	Daily PE2, per Tank (lb/day)
N-1237-776	6,000	3.46	20.8
N-1237-777	6,000	3.46	20.8
N-1237-778	3,500	3.46	12.1
N-1237-779	3,500	3.46	12.1
N-1237-780	3,500	3.46	12.1
N-1237-783	6,000	3.46	20.8
N-1237-784	6,000	3.46	20.8
N-1237-785	20,000	3.46	69.2
Total			188.7

Annual PE2:

The maximum daily VOC emissions from these new fermentation tanks will be determined using the throughput rates listed above and the red wine emission factor as that represents the highest emission factor for fermentation operations.

Annual PE2 = Throughput Rate (gal/year) x Red Wine EF (lb-VOC/1,000 gallons)

Annual Post-Project Potential to Emit			
Permits	Max Daily Throughput, (gal/year)	Red Wine Emission Factor (lb-VOC/1,000 gal)	Annual PE2, per Tank (lb/year)
N-1237-776	120,000	6.2	744
N-1237-777	120,000	6.2	744
N-1237-778	70,000	6.2	434
N-1237-779	70,000	6.2	434
N-1237-780	70,000	6.2	434
N-1237-783	120,000	6.2	744
N-1237-784	120,000	6.2	744
N-1237-785	400,000	6.2	2,480
Total			6,758

The applicant is proposing to establish a combined annual VOC limit for all fermentation and storage operations within this project. They are proposing that the combined annual total VOC emissions from the tanks in this project be equal to the sum of the annual potentials to emit, $728 + 6,758 = 7,486$ lb-VOC/year; therefore, each individual tank will not contain an annual fermentation and/or storage throughput or VOC emission limit.

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

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

This project only concerns VOC emissions. This facility acknowledges that its VOC emissions are already above the Offset and Major Source Thresholds for VOC emissions; therefore, SSPE1 calculations are not necessary.

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

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

This project only concerns VOC emissions. This facility acknowledges that its VOC emissions are already above the Offset and Major Source Thresholds for VOC emissions; therefore, SSPE2 calculations are not necessary.

5. Major Source Determination

Rule 2201 Major Source Determination:

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

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

This source is an existing Major Source for VOC emissions and will remain a Major Source for VOC. No change in other pollutants are proposed or expected as a result of this project.

Rule 2410 Major Source Determination:

The following table summarizes projects that authorized winery tank related operations at this facility that resulted in a potential VOC emission increase prior to the proposed project.

Project Number	Proposed Permitting Actions	PE (lb-VOC/year)
N-1072605	Applying for In-house PTOs for existing wine storage and fermentation tanks	470,985
N-1110129	Install 2 wine fermentation tanks	8,432
N-1110722	Convert 7 existing grape juice tanks to wine fermentation tanks	15,680
N-1113344	Install 104 wine storage and fermentation tanks	94,430
N-1113395	Install 3 wine storage and fermentation tanks	10,173
N-1113407	Install 2 distilled spirit tanks	188
N-1123583	Install 52 new wine storage tanks	34,264
N-1131615	Install 8 wine storage tanks and 24 wine fermentation tanks	85,064
N-1132991	Install 20 wine storage tanks	9,596
N-1133659	Install 24 wine fermentation and 8 wine storage tanks	85,064
N-1141254	Install 12 wine storage and fermentation tanks	1,164
N-1143437	Install 12 wine storage tanks	6,536
N-1143697	Install 5 wine and spirits storage tanks	328
N-1153264	Install 3 wine and spirits storage tanks	400
N-1162285	Install 95 wine storage tanks	27,344
Total		849,648

As indicated above, the SSPE for VOC emissions solely from their winery tank related operations prior to the proposed project is calculated to be 849,648 pounds per year, equivalent to 424.6 tons per year.

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 threshold for VOC is applicable.

PSD Major Source Determination (tons/year)	
	VOC
Facility PE before Project Increase	424.6
PSD Major Source Thresholds	250
Existing PSD Major Source?	Yes

As shown above, the facility is an existing Major Source for PSD for VOC. Therefore, the facility is an existing Major Source for PSD.

6. Baseline Emissions (BE)

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

Pursuant to District Rule 2201, BE = PE1 for:

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

otherwise,

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

Storage Tanks:

Rule 2201 defines a Fully-Offset Emissions Unit as “an emissions unit for which offsets have been provided for the unit’s full potential to emit.” Under projects N-1143697 and N-1153264, E & J Gallo Winery was required to provide offsets for the full potential to emit upon the installation of these storage tanks. Therefore, each of the storage tanks being modified within this project can be considered Fully-Offset Emissions Units and the BE can be set equal to each unit’s PE1. The BE for the storage tanks within this project is summarized in the following table:

Pre-Project Potential to Emit		
Permits	Annual PE1, (lb/year)	BE, (lb/year)
N-1237-776	83	83
N-1237-777	83	83
N-1237-778	54	54
N-1237-779	54	54
N-1237-780	54	54
N-1237-783	143	143
N-1237-784	143	143
N-1237-785	114	114
Storage Tank PE1 Total:		728

Wine Fermentation Tanks:

Since these are new emissions units, BE = PE1 = 0 for all pollutants for each unit.

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."

As discussed in Section VII.C.5 above, since this facility is a major source for VOC emissions, the project's PE2 is compared to the SB 288 Major Modification Thresholds in the following table in order to determine if the SB 288 Major Modification calculation is required.

SB 288 Major Modification Thresholds			
Pollutant	Project PE2 (lb/year)	Threshold (lb/year)	SB 288 Major Modification Calculation Required?
VOC	7,486	50,000	No

Since the project's PE2 does not surpass the SB 288 Major Modification Threshold for VOC emissions, this project does not constitute an SB 288 Major Modification.

8. Federal Major Modification

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

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. Emission decreases may not cancel out the increases for this determination.

Step 1

For existing emissions units, the increase in emissions is calculated as follows.

$$\text{Emission Increase} = \text{PAE} - \text{BAE} - \text{UBC}$$

Where: PAE = Projected Actual Emissions, and
BAE = Baseline Actual Emissions
UBC = Unused baseline capacity

The applicant has indicated that they want the ability to use all of these tanks up to their full potential to emit. Therefore, the PAE will be set equal to the post project SLC value calculated above, 7,486 lb-VOC/year.

As shown in Section VII.C.7 above, the BAE for these tanks can be set equal to each tank's PE1.

In addition, the construction of these 8 tanks being modified within this project has not been completed and they have not been in operation yet. Therefore, the storage tanks do not have any unused baseline capacity and the UBC will be set equal to zero for the purposes of this Federal Major Modification calculation.

$$\begin{aligned}\text{Emission Increase}_{8 \text{ SLC Tanks}} &= \text{PAE}_{8 \text{ Tanks}} - \text{PE1}_{8 \text{ Tanks}} - \text{UBC} \\ \text{Emission Increase}_{8 \text{ SLC Tanks}} &= 7,486 \text{ lb-VOC/year} - 728 \text{ lb/year} - 0 \text{ lb-VOC/year} \\ \text{Emission Increase}_{8 \text{ SLC Tanks}} &= 6,758 \text{ lb-VOC/year}\end{aligned}$$

The project's combined total emission increases are compared to the Federal Major Modification Thresholds in the following table.

Federal Major Modification Thresholds for Emission Increases			
Pollutant	Total Emissions Increases (lb/yr)	Thresholds (lb/yr)	Federal Major Modification?
VOC*	6,758	0	Yes

*If there is any emission increases in NO_x or VOC, this project is a Federal Major Modification and no further analysis is required.

Since there is an increase in VOC emissions, this project constitutes a Federal Major Modification. Federal Offset quantities are calculated below.

Federal Offset Quantities:

The Federal offset quantity is calculated only for the pollutants for which the project is a Federal Major Modification. The Federal offset quantity is the sum of the annual emission changes for all new and modified emission units in a project calculated as the potential to emit after the modification (PE2) minus the actual emissions (AE) during the baseline period for each emission unit times the applicable federal offset ratio. As shown above, this project triggers a Federal Major Modification for VOC emissions. Therefore, the federal offsets required for VOC emissions for this project are as follows:

$$\text{Federal Offset Quantity} = \text{PE2} - \text{AE}$$

Where: PE2 = Post Project Potential to Emit
AE = Actual Emissions

The PE2 will be set equal to the post project SLC value calculated above, 7,486 lb-VOC/year.

In accordance with the definitions in 40 CFR Part 51, Subpart I, *Review of New Sources and Modifications*, Section 165, in general, AE means the actual rate at which the emissions unit actually emitted during any consecutive 24-month period which is representative of normal source operation. However, for any unit that has not begun normal source operations, the AE shall be equal to the unit's potential to emit. As discussed above, construction of the 8 wine and distilled spirits storage tanks being included in the new VOC SLC has not yet been completed. Therefore, since each of these modified wine and distilled spirits storage tanks

in this project has not begun normal operations, the AE will be set equal to each unit's pre-project potential to emit.

VOC		Federal Offset Ratio	1.5
Permit No.	Actual Emissions (lb/year)	Potential Emissions (lb/year)	Emissions Change (lb/yr)
N-1237-776 through -785	728	7,486	6,758
Net Emission Change (lb/year):			6,758
Federal Offset Quantity: (NEC * 1.5)			10,137

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

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

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

I. Project Location Relative to Class 1 Area

As demonstrated in the "PSD Major Source Determination" Section above, the facility was determined to be an existing PSD Major Source. Because the project is not located within 10 km (6.2 miles) of a Class 1 area – modeling of the emission increase is not required to determine if the project is subject to the requirements of Rule 2410.

II. Project Emission Increase – Significance Determination

a. Evaluation of Calculated Post-project Potential to Emit for New or Modified Emissions Units vs PSD Significant Emission Increase Thresholds

As a screening tool, the post-project potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if the total potentials to emit from all new and modified units are below the applicable thresholds, no further PSD analysis is needed.

PSD Significant Emission Increase Determination: Potential to Emit (tons/year)					
	NO₂	SO₂	CO	PM	PM₁₀
Total PE from New and Modified Units	0	0	0	0	0
PSD Significant Emission Increase Thresholds	40	40	100	25	15
PSD Significant Emission Increase?	N	N	N	N	N

As demonstrated above, because the post-project total potentials to emit from all new and modified emission units are below the PSD significant emission increase thresholds, this project is not subject to the requirements of Rule 2410 and no further discussion is required.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix F.

VIII. COMPLIANCE

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*:

- Any new emissions unit with a potential to emit exceeding two pounds per day,
- The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- Any new or modified emissions unit, in a stationary source project, which results in a SB288 Major Modification or a Federal Major Modification.

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

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

As seen in Section VII.C.2 above, the applicant is proposing to add fermentation service to existing wine/distilled spirits storage tanks, each with a PE greater than 2 lb/day for VOC emissions. Therefore, BACT is triggered for VOC emissions.

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

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

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

AIPE calculations are performed solely to determine if BACT is required for modified emission units.

$$\text{AIPE} = \text{PE2} - \text{HAPE}$$

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)

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

HAPE = Historically Adjusted Potential to Emit, (lb/day)

$$\text{HAPE} = \text{PE1} \times (\text{EF2}/\text{EF1})$$

Where,

PE1 = The emissions unit's PE prior to modification or relocation, (lb/day)

EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1

EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

$$\text{AIPE} = \text{PE2} - (\text{PE1} * (\text{EF2} / \text{EF1}))$$

As shown in Section VII.C.2 of this evaluation, the applicant is not proposing to modify the daily throughput limits or emission factors for any of the storage tanks in this project. Therefore, the AIPE calculation can break down to the following:

$$\text{AIPE} = \text{PE2} - \text{PE1} \Rightarrow 0.0 \text{ lb/day}$$

However, as also seen in Section VII.C.2 of this evaluation, the applicant is proposing to establish a combined VOC emission limit between 8 fermentation and storage tanks. The addition of this combined annual VOC emission limit will potentially allow each of the tanks to operate on new days throughout the year that they could not previously operate on. In accordance with District Policy APR 1350, BACT Requirements for Modifications to Existing Emission Units, modifications to existing emission units that result in permitted utilization such the AIPE increases

more than 2.0 lb in any one day are required to satisfy the BACT requirements of Rule 2201.

As shown in Section VII.C.1 above, the daily emissions from each of these 8 existing storage tanks is greater than 2.0 lb/day. Therefore, on any new day that each tank can operate on, the PE1 value would be zero and the AIPE value would be greater than 2.0 lb/day. Therefore, BACT is triggered for VOC emissions from each of these 8 existing wine storage tanks.

d. SB288/Federal Major Modification

As discussed in Sections VII.C.7 above, this project constitutes a Federal Major Modification for VOC emissions. Therefore BACT is triggered for VOC for all emissions units in the project for which there is an emission increase.

2. BACT Guideline

Fermentation Operations:

BACT Guideline 5.4.14 applies to wine fermentation tanks. E & J Gallo Winery is proposing to add fermentation service (fermentation emission units) to 8 wine storage tanks within this project. Therefore, BACT Guideline 5.4.14 is applicable to the wine fermentation tanks and no further discussion is required (BACT Guideline 5.4.14 is included in Appendix B).

Wine Storage Operations:

BACT Guideline 5.4.13, applies to wine storage tanks. E & J Gallo Winery is proposing to modify 8 wine storage tanks. Therefore, BACT Guideline 5.4.13 is applicable to the wine storage tanks and no further discussion is required (BACT Guideline 5.4.13 included in Appendix C).

Distilled Spirits Storage Operations:

BACT Guideline 5.4.15, applies to wine storage tanks. E & J Gallo Winery is proposing to modify 8 distilled spirits storage tanks. Therefore, BACT Guideline 5.4.15 is applicable to the distilled spirits storage tanks and no further discussion is required (BACT Guideline 5.4.15 included in Appendix D).

3. Top-Down BACT Analysis

In accordance with Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Fermentation Operations:

Pursuant to the attached Top-Down BACT Analysis in Appendix B, since the technologically feasible options are not cost effective and pursuant to the attached Achieved-in-Practice Analysis (Attachment B1), BACT has been satisfied with the following:

VOC: Temperature-controlled open top tank with maximum average fermentation temperature of 95 deg F.

Each of the wine fermentation tanks within this project will be a temperature controlled tank with a maximum average fermentation temperature of 95 degrees F. Therefore, the proposed wine fermentation tanks meet the BACT requirements for this class and category of operation and no further discussion is required.

The following condition will be included on each of the fermentation tank ATCs to assure compliance with the BACT requirements:

- 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]

Wine Storage Operations:

Pursuant to the attached Top-Down BACT Analysis (see Appendix C), BACT is 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.

Each of the wine storage tanks being modified within this project is equipped with insulation and a pressure/vacuum valve set to within 10% of the maximum allowable working pressure of the tank; operates in a gas-tight condition and the continuous storage temperature does not exceed 75 degrees F within 60 days of the completion of the fermentation cycle. Therefore, the wine storage tanks meet the BACT requirements for this class and category of operation and no further discussion is required.

The following conditions will be included on the ATCs to assure compliance with the BACT requirements:

- When used for 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]

- 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]

Distilled Spirits Storage Operations:

Pursuant to the attached Top-Down BACT Analysis (see Appendix D), BACT is satisfied with the following:

- VOC: Insulated tank or equivalent, pressure/vacuum valve set within 10% of the maximum allowable working pressure of the tank and "gas tight" tank operation.

Each of the distilled spirits storage tanks being modified within this project is equipped with insulation and a pressure/vacuum valve set to within 10% of the maximum allowable working pressure of the tank and operates in a gas-tight condition. Therefore, the distilled spirits storage tanks meet the BACT requirements for this class and category of operation and no further discussion is required.

The following condition will be included on the ATCs to assure compliance with the BACT requirements:

- When used for 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 Rule 2201]

B. Offsets

1. Offset Applicability

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

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

Pollutant	SSPE2 (lb/yr)	Offset Threshold Levels (lb/yr)	Offsets Required?
VOC	> 20,000	20,000	Yes

2. Quantity of Offsets Required

As discussed above, the facility is an existing Major Source for VOC and the SSPE2 is greater than the offset threshold; therefore offset calculations will be required for this project.

VOC Emissions:

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

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

Where,

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

BE = Baseline Emissions, (lb/year)

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

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

As calculated in Section VII.C.6 above, the BE from the proposed units is equal to PE1. Also, there are no increases in cargo carrier emissions.

These fermentation tanks are subject to the fermentation emission reduction requirements of Rule 4694 and are considered to be controlled sources subject to a 35% reduction in emissions. The facility is currently performing an annual demonstration that sufficient Certified Emission Reductions (CER) are provided to meet the requirements of Rule 4694 Section 5.1. The CERs are achieved by controlling the emissions from brandy tanks and barrels at a brandy plant in Modesto via an air handling system and combustion in an RTO (regenerative thermal oxidizer). Both the Fresno location and Livingston location have CERs assigned to each facility (generated from the control of the brandy plant) to cover the uncontrolled fermentation emissions at each facility. The annual compliance emissions report demonstrates the amount of CERs assigned to each facility is at least 35% of the uncontrolled fermentation emissions at each facility. As these tanks are subject to Rule 4694 and the facility is mitigating 35% of the uncontrolled fermentation emissions each year, requiring offsets for 100% of the fermentation emissions in this project would be requiring double mitigation. Therefore, the offsets required for the fermentation emissions in this project will be reduced by 35% and calculated as follows:

Offsets Required (lb/year) = $\{[\Sigma(PE2 - BE)_{\text{Fermentation}} \times (1 - 0.35)] + \Sigma(PE2 - BE)_{\text{Storage}}\} \times DOR$

As discussed above, the BE from the fermentation tanks is zero and the BE for the storage tanks equal the storage PE1. Since there is no change in the storage emissions from the tanks being modified in this project, the storage portion of the

calculation above is PE2 – PE1, which equals zero. Therefore, for the purposes of this project, the amount of offsets required can be determined using the following equation:

$$\text{Offsets Required (lb/year)} = \Sigma[\text{PE2}_{\text{Fermentation}} - \text{BE}_{\text{Fermentation}}] \times (1 - 0.35) \times \text{DOR}$$

VOC Offsets Required for New Wine Fermentation Tanks without DOR				
Permits	Annual PE2, per Tank (lb/yr)	Annual BE, each (lb/yr)	Offsets Required, per Tank (lb/yr)	Offsets Adjustment x (1 – 0.35), per Tank (lb/year)
N-1237-776	744	83	661	430
N-1237-777	744	83	661	430
N-1237-778	434	54	380	247
N-1237-779	434	54	380	247
N-1237-780	434	54	380	247
N-1237-783	744	143	661	391
N-1237-784	744	143	661	391
N-1237-785	2,480	114	2,366	1,538
Total Offsets Required without DOR:				3,921

In accordance with Rule 2201, Section 4.8.1, the DOR for VOC offsets for projects that trigger federal major modifications shall be 1.5:1. As shown in Section VII.C.8, this project triggers a federal major modification for VOC emissions. Therefore, the DOR will be 1.5:1 and the total amount of VOC ERCs that need to be withdrawn for this project is:

VOC Offsets Required for Wine Storage Tanks with DOR			
Permits	Offsets Required, per Tank (lb/yr)	DOR	Offsets Required per Tank (lb/yr)
N-1237-776	430	1.5	645
N-1237-777	430	1.5	645
N-1237-778	247	1.5	371
N-1237-779	247	1.5	371
N-1237-780	247	1.5	371
N-1237-783	391	1.5	587
N-1237-784	391	1.5	587
N-1237-785	1,538	1.5	2,307
Total Offsets Required with DOR:			5,884

Wine production in the San Joaquin Valley is typically a seasonal event, coinciding with the grape harvest season ("crush season") which normally occurs in the months of August through December. Fermentation is at its peak during September through October with most wine fermentation occurring within those months. Therefore,

emission offsets for these fermentation operations will be required in the third and fourth quarters only.

3rd and 4th Quarter Offsets Required (lb/qtr) = (Total Offsets Required per Tank, lb-VOC/year) ÷ (2 quarters/year)

Quarterly VOC Offsets Required – Fermentation			
Permit Unit	1 st Qtr (lb/ Total Offsets Required, per Tank (lb/yr)qtr)	Quarters/year	Total Offsets Required, per Tank (lb/qtr)
N-1237-776	645	2	322.5
N-1237-777	645	2	322.5
N-1237-778	371	2	185.5
N-1237-779	371	2	185.5
N-1237-780	371	2	185.5
N-1237-783	587	2	293.5
N-1237-784	587	2	293.5
N-1237-785	2,307	2	1,153.5

The applicant has stated that the facility plans to use ERC certificates S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 to offset the increases in emissions associated with this project. The above certificate has available quarterly credits as follows⁽²⁾:

Proposed VOC ERC Certificates				
ERC Certificate #	1 st Qtr (lb/qtr)	2 nd Qtr (lb/qtr)	3 rd Qtr (lb/qtr)	4 th Qtr (lb/qtr)
S-4727-1	33,421	33,380	33,370	33,345
C-1404-1	4,409	4,405	4,252	4,131
S-4751-1	13,522	13,570	7,249	7,260
S-4442-1	6,862	6,852	0	0
S-4773-1	827	771	56	41
S-4780-1	16,794	16,752	4,054	2,387
S-4769-1	2,761	2,761	1,087	1,083
Total	78,596	78,491	50,068	48,247

As seen above, the facility has sufficient credits to fully offset the quarterly emissions increases associated with this project.

⁽²⁾ The available credit values listed below only show the credits available from each certificate that are not currently reserved for other ATC projects in the District's permit database.

Proposed Rule 2201 (offset) Conditions:

N-1237-776 and -777:

- {GC# 4447 - edited} Prior to operating the modifications under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 322 lb, and fourth quarter - 323 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201]

N-1237-778, -779, and -780:

- {GC# 4447 - edited} Prior to operating the modifications under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 185 lb, and fourth quarter - 186 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201]

N-1237-783 and -784:

- {GC# 4447 - edited} Prior to operating the modifications under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 293 lb, and fourth quarter - 294 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201]

N-1237-785:

- {GC# 4447 - edited} Prior to operating the modifications under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 1,153 lb, and fourth quarter - 1,154 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201]

All permit units:

- ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
- All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201]

C. Public Notification

1. Applicability

Public noticing is required for:

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

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

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

As demonstrated in Sections VII.C.8 above, this project triggers a Federal Major Modification. Therefore, public noticing for Federal Major Modification purposes is required.

b. PE > 100 lb/day

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

c. Offset Threshold

Public notification is required if the Pre-Project Stationary Source Potential to Emit (SSPE1) is increased from a level below the offset threshold to a level exceeding the emissions offset threshold, for any pollutant.

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

Pollutant	SSPE1 (lb/year)	SSPE2 (lb/year)	Offset Threshold	Public Notice Required?
VOC	>20,000	>20,000	20,000 lb/year	No

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

d. SSIPE > 20,000 lb/year

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

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	$\Sigma PE2$ (lb/year)	$\Sigma PE1$ (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
VOC	>20,000 + 6,758	>20,000	6,758	20,000 lb/year	No

As demonstrated above, the SSIPE for VOC was less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

e. Title V Significant Permit Modification

As shown in the Discussion of Rule 2520 below, this project constitutes a Title V significant modification. Therefore, public noticing for Title V significant modifications is required for this project.

2. Public Notice Action

As discussed above, public noticing is required for this project for triggering a Federal Major Modification and Title V Significant Permit Modification. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB), the Environmental Protection Agency (EPA) and a public notice will be published in the local newspaper of general circulation prior to the issuance of the ATC's for these winery tank modifications.

D. Daily Emission Limits (DELs)

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

For the existing emissions units in this project (wine/distilled spirits storage), the DELs currently listed on the permits will be carried over on to the proposed permits.

Proposed Rule 2201 (DEL) Conditions:

All Permits:

- The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46/day lb per 1000 gallons of tank capacity. [District Rule 2201]
- 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]
- 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]

N-1237-776 thru -780, -783, -784:

- The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201]

N-1237-785:

- The ethanol content of wine/spirits stored in this tank shall not exceed 24.0 percent by volume. [District Rule 2201]

The daily storage throughput limit varies depending on each tank's size. Therefore, the following conditions will be listed on each of the storage tank ATC permits in this project to ensure compliance:

N-1237-776 and -777:

- The daily storage throughput in this tank shall not exceed 60,000 gallons per day. [District Rule 2201]
- The daily VOC emissions from wine fermentation in this tank shall not exceed 20.8 lb/day. [District Rule 2201]

N-1237-778 thru -780:

- The daily storage throughput in this tank shall not exceed 35,000 gallons per day. [District Rule 2201]
- The daily VOC emissions from wine fermentation in this tank shall not exceed 12.1 lb/day. [District Rule 2201]

N-1237-783 and -784:

- The daily storage throughput in this tank shall not exceed 6,000 gallons per day. [District Rule 2201]
- The daily VOC emissions from wine fermentation in this tank shall not exceed 20.8 lb/day. [District Rule 2201]

N-1237-785:

- The daily storage throughput in this tank shall not exceed 20,000 gallons per day. [District Rule 2201]
- The daily VOC emissions from wine fermentation in this tank shall not exceed 69.2 lb/day. [District Rule 2201]

In addition, in order for the applicant to be able to demonstrate ongoing compliance with the proposed combined annual VOC limit for all fermentation and storage operations for all tanks within this project, the following conditions will be included on each of the tank ATCs:

- For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201]
- The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201]
- Annual VOC emissions from wine fermentation in this tank, calculated on a rolling 12-month basis, shall be determined by the following equation: $E = 6.2 \text{ lb per 1000 gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per 1000 gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201]
- Total annual VOC emissions from wine storage operations shall be determined either as the sum of the emissions for each individual wine movement based on the volume transferred in each wine movement and the batch-specific wine storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine movements. [District Rule 2201]
- The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. For concentrations greater than 24 volume % up to and including 66 volume%, $a = -0.42159$, $b = 0.91316$ and $c = 0.016237$. For concentrations greater than 66 volume % up to and including 92 volume %, $a = 1.3799$, $b = -1.5774$ and $c = 0.87906$. For

concentrations greater than 92 volume % up to and including 100 volume %, $a = 6.6071$, $b = -10.651$ and $c = 4.8061$ [District Rule 2201]

- If the emissions calculated for any rolling 12-month period exceeds the annual emissions limitation 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]

E. Compliance Assurance

1. Source Testing

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

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. In addition, recordkeeping is also required for winery tanks pursuant to District Rule 4694, *Wine Fermentation and Storage Tanks*. All records shall be retained on site for a period of at least five years and made available to District inspection upon request. The following conditions will be included on the ATC's and PTO's to ensure continued compliance with the recordkeeping requirements:

All Permits:

- On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201]
- When this tank is used for wine storage, the operator shall record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rules 4694]
- When this tank is used for 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/spirits transferred, shall be maintained. [District Rules 1070 and 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 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]
- 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694]
- Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201]
- 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]

4. Reporting

No reporting is required to demonstrate compliance with District Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

This Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. However, since this project involves only VOC and no ambient air quality standard exists for VOC, an AAQA is not required for this project.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Federal Major Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Sections VIII-Rule 2201-C.1.a and VIII-Rule 2201-C.1.b, this project does constitute a Federal Major Modification, therefore this requirement is applicable. E & J Gallo Winery's statewide compliance certification is included in Appendix E.

H. Alternative Siting Analysis

District Rule 2201, Section 4.15.1 requires an alternative siting analysis for any project which constitutes a New Major Source or a Federal Major Modification. As shown above, this project triggers a Federal Major Modification. Therefore, an alternative siting analysis must be performed.

In addition to winery tanks, the operation of a winery requires a large number support equipment, services and structures such as raw material receiving stations, crushers, piping, filtering and refrigeration units, warehouses, laboratories, bottling and shipping facilities, and administration buildings.

Since the current project involves the modification of 8 wine storage tanks to add red and white wine fermentation service, it represents only a minimal increase in the winery's total tank volume and no change to any other facets of the operation, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures and facilities on a much greater scale, and would therefore result in a much greater impact.

Rule 2410 Prevention of Significant Deterioration

The prevention of significant deterioration (PSD) program is a construction permitting program for new major stationary sources and major modifications to existing major stationary sources located in areas classified as attainment or in areas that are unclassifiable for any criteria air pollutant.

As shown in Section VII. C. 9. above, this project does not result in a new PSD major source or PSD major modification. Therefore, this project is not subject to the requirements of Rule 2410 and no further discussion is required.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. Section 3.29 defines a significant permit modification as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

Section 3.20.5 states that a minor permit modification is a permit modification that is not a Title I modification. As discussed above, this project triggers a Federal Major Modification which is a Title I modification. As a result, the proposed project constitutes a Significant Modification to the Title V Permit pursuant to Section 3.29.

As discussed above, the these ATCs will not be issued with a Certificate of Conformity (COC). Therefore, the facility must apply to modify their Title V permit with a Significant Modification, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The following condition will be included on each ATC and will assure compliance with the requirements of Rule 2520:

- The permittee shall not implement the changes authorized in this Authority to Construct permit until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3]

Rule 4001 New Source Performance Standards

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 or wine/spirits storage operations. Therefore, no further discussion is required.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAP's)

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 or wine/spirits storage operations. Therefore, no further discussion is required.

Rule 4101 Visible Emissions

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). Visible emissions are not expected as a result of these wine storage and fermentation operations. Therefore, compliance with this rule is expected. Compliance with the requirements of this rule is assured by the following condition, currently included as condition 22 on E & J Gallo Winery's facility wide permit N-1237-0-3:

- No air contaminants shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour which is as dark or darker than Ringelmann #1 or equivalent to 20% opacity and greater, unless specifically exempted by District Rule 4101 (2/17/05). If the equipment or operation is subject to a more stringent visible emission standard as prescribed in a permit condition, the more stringent visible emission limit shall supersede this condition. [District Rule 4101]

Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants, which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected. Compliance with the requirements of this rule is ensured by the following condition, currently included as condition 41 on E & J Gallo Winery's facility wide permit N-1237-0-3:

- 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.

VOC emissions, as ethanol, are the only pollutant generated by winery fermentation and storage tanks. Ethanol is not a HAP as defined by Section 44321 of the California Health and Safety Code. Therefore, there are no increases in HAP emissions associated with any emission units in this project and a health risk assessment is not necessary. No further risk analysis is required.

Rule 4623 Storage of Organic Liquids

The purpose of this rule is to limit volatile organic compound (VOC) emissions from the storage of organic liquids. This rule applies to any tank with a capacity of 1,100 gallons or greater in which any organic liquid is placed, held, or stored.

However, Section 4.1.4 provides an exemption for tanks used to store fermentation products, byproducts or spirits. The tanks in this project are used solely for the fermentation and storage of wine and distilled spirits.

Therefore, the requirements of this rule are not applicable to any of the winery tanks within this project.

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 this rule apply to all tanks with capacity in excess of 5,000 gallons.

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.

Therefore, the following conditions will be placed on the permit for each storage tank with capacity greater than 5,000 gallons and not constructed of concrete or wood to ensure compliance with the requirements of Section 5.2.1:

- When used for 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 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 placed on the permit for each storage tank with capacity greater than 5,000 gallons and not constructed of concrete or wood to ensure compliance with the requirements of Section 5.2.2:

- 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]

Every three years, 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. The following conditions on the facility-wide permit (N-1237-0-3) assure compliance:

- A Three-Year Compliance Plan that demonstrates compliance with the requirements of Section 5.1 of District Rule 4694 for each year of the applicable compliance period shall be submitted to the District by no later than December 1, 2018, and every three years thereafter on or before December 1. [District Rule 4694]
- A Three-Year Compliance Plan Verification that demonstrates that the Three-Year Compliance Plan elements are in effect shall be submitted to the District by no later than July 1, 2019, and every three years thereafter on or before July 1. [District Rule 4694]
- An Annual Compliance Plan Demonstration that shows compliance with the applicable requirements of this rule shall be submitted to the District by no later than March 1, 2017, and every year thereafter on or before March 1. [District Rule 4694]
- Operators using CER to mitigate fermentation emissions shall perform all monitoring and recordkeeping, as established in their approved Three-Year Compliance Plan, and shall maintain all records necessary to demonstrate compliance. [District Rule 4694]
- The operator shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, or report. Support information includes copies of all reports required by the permit and, for continuous monitoring instrumentation, all calibration and maintenance records and all original strip-chart recordings [District Rule 2520, 9.4.2]

Section 6.4.1 requires that records be kept for each fermentation batch. The following condition will be placed on the ATCs to assure compliance:

- 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. All tanks in this facility are storage tanks. Therefore, the following conditions

will be placed on the permit for each storage tank to assure compliance with the requirements of Section 6.4.2:

- When this tank is used for wine storage, the operator shall record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 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. The following condition on the facility-wide permit (N-1237-0-3) ensures compliance:

- Operators using CER to mitigate fermentation emissions shall perform all monitoring and recordkeeping, as established in their approved Three-Year Compliance Plan, and shall maintain all records necessary to demonstrate compliance. [District Rule 4694]

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

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 County of Merced (County) is the public agency having principal responsibility for approving the project. As such, the County served as the Lead Agency (CCR §15367). In approving the project, the Lead Agency prepared and adopted a Mitigated Negative Declaration. The Lead agency filed a Notice of Determination, stating that the environmental document was adopted pursuant to the provisions of CEQA and concluding that the project would not have a significant effect on the environment.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CCR §15381). As a Responsible Agency the District complies with CEQA by considering the environmental document prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CCR §15096).

The District has considered the Lead Agency's environmental document and finds that it adequately characterizes the project's potential impact on air quality. In addition, all feasible and cost-effective control measures to reduce potential impacts on air quality resulting from project related stationary source emissions have been applied to the project as part of BACT. Furthermore, the District has conducted an engineering evaluation of the project, this document, which demonstrates that Stationary Source emissions from the project would be reduced. Thus, the District finds that through a combination of project design elements, compliance with applicable District rules and regulations, and compliance with District air permit conditions, project specific stationary source emissions would be reduced to lessen the impacts on air quality. The District does not have authority over any of the other project impacts and has, therefore, determined that no additional findings are required (CEQA Guidelines §15096(h)).

Indemnification Agreement/Letter of Credit Determination

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

The proposed project is to modify existing permits of 8 existing winery storage tanks to add the ability to perform wine fermentation in each tank and to establish a VOC Specific Limiting Condition (SLC). Typically wineries dealing with fermentation tanks are an operation of potential public concern in the Valley. Therefore, the District concludes that an Indemnification Agreement and Letter of Credit is required for this project.

IX. RECOMMENDATION

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period and EPA 45-day commenting period, issue Authorities to Construct N-1237-776-1 through -780-1 and -783-1 through -785-1 subject to the permit conditions on the attached draft Authorities to Construct in Appendix G.

X. BILLING INFORMATION

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Annual Fee
N-1237-776-1	3020-05-B	6,000 gallons	\$103
N-1237-777-1	3020-05-B	6,000 gallons	\$103
N-1237-778-1	3020-05-A	3,500 gallons	\$83
N-1237-779-1	3020-05-A	3,500 gallons	\$83
N-1237-780-1	3020-05-A	3,500 gallons	\$83
N-1237-783-1	3020-05-B	6,000 gallons	\$103
N-1237-784-1	3020-05-B	6,000 gallons	\$103
N-1237-785-1	3020-05-C	20,000 gallons	\$149

Appendices:

- Appendix A: Current Valid ATCs for Wine Storage Tanks
- Appendix B: BACT Guideline 5.4.14 and Fermentation Tanks Top Down VOC BACT Analysis
- Appendix C: BACT Guideline 5.4.13 and Wine Storage Tanks Top Down VOC BACT Analysis
- Appendix D: BACT Guideline 5.4.15 and Distilled Spirits Storage Tanks Top Down VOC BACT Analysis
- Appendix E: Statewide Compliance Certification
- Appendix F: Quarterly Net Emissions Change (QNEC) Calculations
- Appendix G: Draft ATCs

Appendix A

Current Valid ATCs for Wine Storage Tanks



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



HEALTHY AIR LIVING™

AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-776-0

ISSUANCE DATE: 03/17/2015

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

6,000 GALLON INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D601) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT

CONDITIONS

1. The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 20 lb, 2nd quarter - 21 lb, 3rd quarter - 21 lb, and fourth quarter - 21 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 04/21/11). [District Rule 2201]
3. ERC Certificate Numbers S-4260-1, C-1229-1, S-4354-1, S-4126-1, S-4381-1, S-4306-1, S-4414-1 and/or N-002-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
4. The nominal tank dimensions are 9.00 feet in diameter and 12 feet in height with a proposed volume of 6,000 gallons. The permittee shall submit to the District the gauge volume of the tank within 30 days of the actual tank capacity measurement. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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.

Sayed Sadredin, Executive Director / APCO


Arnaud Marjollet, Director of Permit Services
N-1237-776-0 Mar 17 2015 1:17PM - GARCIAJ : Joint Inspection NOT Required

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6. 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]
7. 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]
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]
9. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201]
10. The maximum wine/spirits storage throughput in this tank shall not exceed 60,000 gallons per day. [District Rule 2201]
11. The maximum wine/spirits storage throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 120,000 gallons per year. [District Rule 2201]
12. The operator shall determine and 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. 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/spirits transferred, shall be maintained. [District Rules 1070 and 2201]
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage and fermentation throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201]
15. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201]
16. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201]
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 1070]



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



HEALTHY AIR LIVING™

AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-777-0

ISSUANCE DATE: 03/17/2015

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

6,000 GALLON INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D602) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT

CONDITIONS

1. The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 20 lb, 2nd quarter - 21 lb, 3rd quarter - 21 lb, and fourth quarter - 21 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 04/21/11). [District Rule 2201]
3. ERC Certificate Numbers S-4260-1, C-1229-1, S-4354-1, S-4126-1, S-4381-1, S-4306-1, S-4414-1 and/or N-002-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
4. The nominal tank dimensions are 9.00 feet in diameter and 12 feet in height with a proposed volume of 6,000 gallons. The permittee shall submit to the District the gauge volume of the tank within 30 days of the actual tank capacity measurement. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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


Amaud Marjollet, Director of Permit Services

03/17/2015 1:17 PM - GARCIA Joint Inspection NOT Required

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6. 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]
7. 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]
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]
9. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201]
10. The maximum wine/spirits storage throughput in this tank shall not exceed 60,000 gallons per day. [District Rule 2201]
11. The maximum wine/spirits storage throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 120,000 gallons per year. [District Rule 2201]
12. The operator shall determine and 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. 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/spirits transferred, shall be maintained. [District Rules 1070 and 2201]
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage and fermentation throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201]
15. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201]
16. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201]
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 1070]



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-778-0

ISSUANCE DATE: 03/17/2015

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

3,500 GALLON INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D301) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT

CONDITIONS

1. The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 13 lb, 2nd quarter - 13 lb, 3rd quarter - 14 lb, and fourth quarter - 14 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 04/21/11). [District Rule 2201]
3. ERC Certificate Numbers S-4260-1, C-1229-1, S-4354-1, S-4126-1, S-4381-1, S-4306-1, S-4414-1 and/or N-002-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
4. The nominal tank dimensions are 7.00 feet in diameter and 12 feet in height with a proposed volume of 3,500 gallons. The permittee shall submit to the District the gauge volume of the tank within 30 days of the actual tank capacity measurement. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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.

Sayed Sadredin, Executive Director / APCO


Arnaud Marjoret, Director of Permit Services
N-1237-778-0: Mar 17 2015 1:17PM - QARCAU - Joint Inspection NOT Required

Northern Regional Office • 4800 Enterprise Way • Modesto, CA 95356-8718 • (209) 557-6400 • Fax (209) 557-6475

6. 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]
7. 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]
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]
9. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201]
10. The maximum wine/spirits storage throughput in this tank shall not exceed 35,000 gallons per day. [District Rule 2201]
11. The maximum wine/spirits storage throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 78,000 gallons per year. [District Rule 2201]
12. The operator shall determine and 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. 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/spirits transferred, shall be maintained. [District Rules 1070 and 2201]
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage and fermentation throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201]
15. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201]
16. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201]
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 1070]



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-779-0

ISSUANCE DATE: 03/17/2015

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

3,500 GALLON INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D302) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT

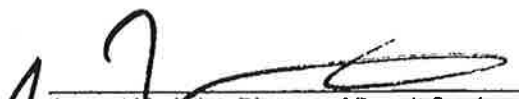
CONDITIONS

1. The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 13 lb, 2nd quarter - 13 lb, 3rd quarter - 14 lb, and fourth quarter - 14 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 04/21/11). [District Rule 2201]
3. ERC Certificate Numbers S-4260-1, C-1229-1, S-4354-1, S-4126-1, S-4381-1, S-4306-1, S-4414-1 and/or N-002-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
4. The nominal tank dimensions are 7.00 feet in diameter and 12 feet in height with a proposed volume of 3,500 gallons. The permittee shall submit to the District the gauge volume of the tank within 30 days of the actual tank capacity measurement. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director / APCO


Arnaud Marijollet, Director of Permit Services
N-1237-779-0 Mar 17 2015 1:17PM - GARGUJ Joint Inspection NOT Required

6. 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]
7. 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]
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]
9. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201]
10. The maximum wine/spirits storage throughput in this tank shall not exceed 35,000 gallons per day. [District Rule 2201]
11. The maximum wine/spirits storage throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 78,000 gallons per year. [District Rule 2201]
12. The operator shall determine and 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. 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/spirits transferred, shall be maintained. [District Rules 1070 and 2201]
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage and fermentation throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201]
15. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201]
16. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201]
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 1070]



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-780-0

ISSUANCE DATE: 03/17/2015

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

3,500 GALLON INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D303) WITH PRESSURE/VACUUM VALVE AND INSULATION, OR EQUIVALENT

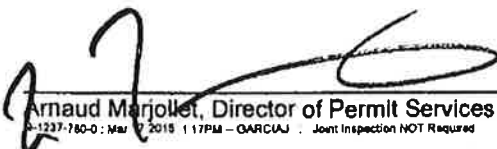
CONDITIONS

1. The facility shall submit an application to modify the Title V permit in accordance with the timeframes and procedures of District Rule 2520. [District Rule 2520] Federally Enforceable Through Title V Permit
2. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 13 lb, 2nd quarter - 13 lb, 3rd quarter - 14 lb, and fourth quarter - 14 lb. Offsets shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 04/21/11). [District Rule 2201]
3. ERC Certificate Numbers S-4260-1, C-1229-1, S-4354-1, S-4126-1, S-4381-1, S-4306-1, S-4414-1 and/or N-002-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
4. The nominal tank dimensions are 7.00 feet in diameter and 12 feet in height with a proposed volume of 3,500 gallons. The permittee shall submit to the District the gauge volume of the tank within 30 days of the actual tank capacity measurement. [District Rule 2201]
5. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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.

Sayed Sadredin, Executive Director / APCO


Arnaud Marjolet, Director of Permit Services
N-1237-780-0 : Mar 17 2015 11:17PM - QARCUJ - Joint Inspection NOT Required

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6. 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]
7. 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]
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]
9. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201]
10. The maximum wine/spirits storage throughput in this tank shall not exceed 35,000 gallons per day. [District Rule 2201]
11. The maximum wine/spirits storage throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 78,000 gallons per year. [District Rule 2201]
12. The operator shall determine and 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. 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/spirits transferred, shall be maintained. [District Rules 1070 and 2201]
14. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage and fermentation throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201]
15. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201]
16. Records shall be maintained that demonstrate the date of each year's start of crush season. [District Rule 2201]
17. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 1070]



AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-783-0

ISSUANCE DATE: 01/29/2016

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D603) WITH PRESSURE/VACUUM VALVE AND INSULATION

CONDITIONS

1. 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. 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. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 53 lb, 2nd quarter - 54 lb, 3rd quarter - 54 lb, and fourth quarter - 54 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4601-1, S-4354-1, S-4442-1, S-4381-1, S-4381-1, S-4480-1, S-4414-1, C-1229-1 and/or N-002-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director / APCO


Arnaud Marjollet, Director of Permit Services

5. The nominal tank dimensions are 9.00 feet in diameter and 12 feet in height with a proposed volume of 6,000 gallons. The permittee shall submit to the District the gauge volume of the tank within 30 days of the actual tank capacity measurement. [District Rule 2201] Federally Enforceable Through Title V Permit
6. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
7. 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
8. 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
9. 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
10. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The maximum wine/spirits storage throughput in this tank shall not exceed 6,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The maximum wine/spirits storage throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 220,000 gallons per year (equivalent to 143 lb-VOC/year). [District Rule 2201] Federally Enforceable Through Title V Permit
13. The operator shall determine and 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] Federally Enforceable Through Title V Permit
14. 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/spirits transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
15. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage and fermentation throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit
16. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit
17. 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
18. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-784-0

ISSUANCE DATE: 01/29/2016

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (D604)
WITH PRESSURE/VACUUM VALVE AND INSULATION

CONDITIONS

1. 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. 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. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 53 lb, 2nd quarter - 54 lb, 3rd quarter - 54 lb, and fourth quarter - 54 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4601-1, S-4354-1, S-4442-1, S-4381-1, S-4381-1, S-4480-1, S-4414-1, C-1229-1 and/or N-002-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

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.

Sayed Sadredin, Executive Director / APCO


Arnaud Marjollet, Director of Permit Services
N-1237-784-0 Feb 2 2016 11 22AM - GARCIAJ - JWH Inspection NOT Required

5. The nominal tank dimensions are 9.00 feet in diameter and 12 feet in height with a proposed volume of 6,000 gallons. The permittee shall submit to the District the gauge volume of the tank within 30 days of the actual tank capacity measurement. [District Rule 2201] Federally Enforceable Through Title V Permit
6. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
7. 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
8. 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
9. 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
10. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The maximum wine/spirits storage throughput in this tank shall not exceed 6,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The maximum wine/spirits storage throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 220,000 gallons per year (equivalent to 143 lb-VOC/year). [District Rule 2201] Federally Enforceable Through Title V Permit
13. The operator shall determine and 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] Federally Enforceable Through Title V Permit
14. 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/spirits transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
15. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage and fermentation throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit
16. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit
17. 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
18. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-785-0

ISSUANCE DATE: 01/29/2016

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:
20,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (D201)
WITH PRESSURE/VACUUM VALVE AND INSULATION

CONDITIONS

1. 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. 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. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 42 lb, 2nd quarter - 43 lb, 3rd quarter - 43 lb, and fourth quarter - 43 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 4/21/11) for the ERC specified below. [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4601-1, S-4354-1, S-4442-1, S-4381-1, S-4381-1, S-4480-1, S-4414-1, C-1229-1 and/or N-002-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director / APCO


Arnaud Marjollet, Director of Permit Services
N-1237-785-0 Feb 2 2016 11:22AM - GARCIAJ - District Inspection NOT Required

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5. The nominal tank dimensions are 12.00 feet in diameter and 24 feet in height with a proposed volume of 20,000 gallons. The permittee shall submit to the District the gauge volume of the tank within 30 days of the actual tank capacity measurement. [District Rule 2201] Federally Enforceable Through Title V Permit
6. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
7. 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
8. 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
9. 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
10. The ethanol content of wine/spirits stored in this tank shall not exceed 24.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
11. The maximum wine/spirits storage throughput in this tank shall not exceed 20,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The maximum wine/spirits storage throughput in this tank, calculated on a twelve month rolling basis, shall not exceed 500,000 gallons per year (equivalent to 114 lb-VOC/year). [District Rule 2201] Federally Enforceable Through Title V Permit
13. The operator shall determine and 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] Federally Enforceable Through Title V Permit
14. 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/spirits transferred, shall be maintained. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit
15. The operator shall maintain records of the calculated 12 month rolling wine ethanol content and storage and fermentation throughput rate (ethanol percentage by volume and gallons per 12 month rolling period, calculated monthly). [District Rule 2201] Federally Enforceable Through Title V Permit
16. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit
17. 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
18. All records shall be retained on-site for a period of at least five years and made available for District inspection upon request. [District Rule 1070] Federally Enforceable Through Title V Permit

Appendix B

BACT Guideline 5.4.14 Top Down VOC BACT Analysis for Wine Fermentation Tanks

Top Down BACT Analysis for VOCs from Wine Fermentation Operations

Step 1 - Identify All Possible Control Technologies

SJVUAPCD BACT Clearinghouse guideline 5.4.14 identifies the following control options for wine fermentation tanks as follows:

- 1) Capture of VOCs and thermal oxidation or equivalent (88% control) – Technologically Feasible
- 2) Capture of VOCs and carbon adsorption or equivalent (86% control) – Technologically Feasible
- 3) Capture of VOCs and absorption or equivalent (81% control) – Technologically Feasible
- 4) Capture of VOCs and condensation or equivalent (81% control) – Technologically Feasible
- 5) Temperature-Controlled Open Top Tank with Maximum Average Fermentation Temperature of 95 deg F – Achieved in Practice

As mentioned above, BACT guideline 5.4.14 lists both absorption (scrubber) and condensation systems as technologically feasible options for the control of VOC emissions from wine fermentation operations. Since 2009, there has been substantial development of these two control technologies, prompting the District to perform an analysis to determine whether these technologies can now be considered Achieved in Practice. As demonstrated in the Achieved in Practice analysis in Attachment B1, these technologies do not yet meet the criteria to be considered as Achieved in Practice. Therefore, the technologies will be considered technologically feasible and a cost analysis will be performed for these technologies.

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Rank by Control Effectiveness		
Rank	Control	Overall Capture and Control Efficiency ^(*)
1	Capture of VOCs and thermal oxidation or equivalent	88%
2	Capture of VOCs and carbon adsorption or equivalent	86%
3	Capture of VOCs and absorption (scrubber) or equivalent	81%
4	Capture of VOCs and condensation or equivalent	81%
5	Temperature-Controlled Open Top Tank with Maximum Average Fermentation Temperature of 95 deg F	Baseline (Achieved-in-Practice)

(*) Capture efficiency (90%) x removal efficiency for control device.

Step 4 - Cost Effectiveness Analysis

A cost effective analysis must be performed for all control options that have not been determined to be achieved in practice in the list from Step 3 above, in the order of their ranking, to determine the cost effective option with the lowest emissions.

District BACT Policy APR 1305 establishes annual cost thresholds for imposed controls based upon the amount of pollutants reduced by the controls. If the cost of control is at or below the threshold, it is considered a cost effective control. If the cost exceeds the threshold, it is not cost effective and the control is not required. Per District BACT Policy, the maximum cost limit for VOC reduction is \$17,500 per ton of VOC emissions reduced.

BACT Analysis Assumptions – All Control Options

- Sales Tax: This facility is located in Livingston, CA, which has a current sales tax rate of 7.25%. However, pollution control equipment qualifies for a partial tax exemption in California. According to the following link, the tax exemption rate is 4.1875%, http://www.boe.ca.gov/sutax/manufacturing_exemptions.htm#Purchasers. Therefore, the sales tax rate used in this analysis will be set equal to 3.06% (7.25% - 4.1875%).
- Due to the unsteady state operation of fermentation tanks, initial source testing is expected to be a significant technical operation with significant expense, conducted over the fermentation cycle rather than the typical three 30-minute steady state measurements. An additional cost of \$15,000 per control unit will be assumed for initial source testing.
- Annual source testing will also be required. It is assumed that only one representative control unit will require testing each year. An annual charge of \$15,000 will be included.
- Project Contingency: For detailed estimates, the Association for the Advancement of Cost Engineering International recommends a contingency factor of 15%, while the Electric Power Research Institute recommends a contingency of 10% to 20% (<ftp://ftp.repec.org/opt/ReDIF/RePEc/sip/04-005.pdf>). Therefore, a cost contingency of 15% will be applied to the detailed estimates provided in these cost analyses. Additionally, since both the direct and indirect costs are detailed estimates and both of these categories of costs have uncertainty associated with them; the contingency will be applied to both the direct and indirect costs.
- The cost of project management, internal engineering operations planning required to implement a new control technology in a commercial winery will be included in each cost analysis as the owner's cost. In District project-1133347, an owners cost of \$100,000 was assumed for an installation of 12 wine fermentations/storage tanks with a combined total capacity of 4,200,000 million gallons. This current project has a combined total capacity of 54,500 gallons. The owners cost will be conservatively assumed to have a linear relationship with the total capacity of the tanks being installed. An owner's cost of \$1,298 ($\$100,000 \times 54,500 \text{ gallons} \div 4,200,000 \text{ gallons}$) will be used for the following cost analyses.
- In order to capture fermentation emissions from wine fermentation tanks, it is necessary to enclose the tanks and duct the captured vapors to the control device. An increase in back pressure can result from enclosing the control device and adding the duct work and control system. Increases in back pressure to the tanks causes additional CO₂ absorption into the wine, resulting in the possibility of an effervescent reaction and a foam-over event. To proactively prevent catastrophic events like foam overs, it is necessary to monitor back pressure and temperature of the tanks and take immediate

action if the back pressure rises to critical levels that suggest a foam over is about to occur. The cost of the equipment to monitor the pressure and temperature and integrate the data into the winery's existing system is included in the Programming Controller Logic (PCL) cost. In District Project C-1133347, a PCL cost of \$10,000 per control system was provided to the District. This cost will be used to estimate PCL costs for the currently proposed project.

- In addition to the ducting costs calculated, the facility proposed to also include "piping" costs for each control option as suggested by EPA's Control Cost Manual, Sixth Edition (EPA/452/B-02-001); however, it can reasonably be assumed that the "piping" costs are already accounted for in the ducting costs. Therefore, the District will not include "piping" cost for each control option.
- In determining the labor costs for the cost analyses, three shifts is assumed to be appropriate for a control system serving wine fermentation tanks, since the emission rate from fermentation varies more and is less stable than the emission rate from wine storage.

Maximum Vapor Flow Rate

Based on the kinetic model provided by the facility, maximum CO₂ production rate for the fermentation tank group is 267 cfm.

Uncontrolled Fermentation Emissions

E & J Gallo Winery is proposing to establish a combined VOC emission limit for all fermentation and storage operations for the 8 winery tanks being modified within this project. Other than the combined VOC emission limit from these tanks, there will be no specific condition limiting the amount of wine fermentation that can take place in the 8 fermentation tanks. Therefore, for the purposes of this cost effectiveness analysis, uncontrolled fermentation VOC emissions will be set equal to the total VOC emissions allowed under the new combined SLC.

Uncontrolled Fermentation PE = 7,486 lb-VOC/year

Collection System Capital Investment (based on ductwork and clean-in-place system)

A common feature of all technically feasible options is that they require installation of a collection system for delivering the VOCs from the tanks to the control device(s). Therefore, the following collection system analysis and cost estimate will be used in the cost effectiveness analysis for each control option.

Design Basis

- The costs for the ductwork and the required clean-in-place (CIP) system are based on information from the 2005 Eichleay Study. The 2005 Eichleay study was used in development of District Rule 4694 Wine Fermentation and Storage Tanks and includes substantial information on the costs and details of the potential application of VOC controls to wineries and addresses many of the technical issues of the general site specific factors for wineries.
- The District performed a cost survey of stainless steel ducting/piping and found that the values stated in the Eichleay report including the cost of inflation (applied as stated below) were cheaper; therefore, as a conservative estimate, the District will use the cost of ducting/piping from the

Eichleay report which will include ducting, fittings, bolt up, handle, and install. A summary of the ducting/piping cost survey is included in Attachment C3.

- Eichleay's cost estimate for ducting included the duct, fittings, bolt up, handle and install. When additional costs, as suggested in the EPA Control Cost Manual, were added onto the ducting cost estimate, the facility double counted some of the costs that Eichleay already accounted for in their estimate; therefore, the District did not allow the additional costs for foundations & supports, handling & erection, electrical, piping or painting.
- The facility provided a ducting cost estimate which included a redundant ducting system and redundant ducting isolation components to allow the emission control systems to continue to be operated in the event of a foam-over. The District found these redundant systems to be unnecessary and the effects of a foam-over could be mitigated or minimized with smart valving and backflow preventer design integrated into the attached ducting layout diagrams in Attachment B2. Therefore, redundant ducting has been removed from the cost estimate for the purposes of this top down BACT analysis.
- The collection system consists of stainless steel place ductwork (stainless steel is required due to food grade product status) with isolation valving, connecting the 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 be included in the cost estimate.
- One of the major concerns of a manifold duct system is microorganisms spoiling the product, and transferring from one tank to another. It is necessary to design into the system a positive disconnect of the ducting system when the tanks are not being filled. There are a number of ways this can be done. In this case, an automatic butterfly valve with a physical spool to disconnect the tank from the duct will be utilized.
- An inflation amount of 22.89% for the period of 2005 to 2016 taken from United States Department of Labor Bureau of Labor Statistics' CIP Inflation Calculator will be used:
http://www.bls.gov/data/inflation_calculator.htm.

Capital Cost of Ductwork

As detailed in the tank layout sketches and the ductwork cost calculations included in Attachment B2, the cost is summarized below:

Duct = \$6,315

Small size valves and fittings = \$2,125/valve x 8 valves x 0.5 system¹ = \$8,500

Unit installed cost for small size disconnect spool = \$500/tank x 8 tanks x 0.5 system = \$2,000

1 Knockout drum = \$5,000

Total = \$6,315 + \$8,500 + \$2,000 + \$5,000
= **\$21,820**

¹ Since the system will comprise of 3" pipe instead of the normal 6" pipe for other projects, the valves, fittings and disconnect spool will be discounted by 50%.

Capital Cost of Ductwork for Wine Fermentation Tanks	
Cost Description	Cost (\$)
Combined Duct Estimate (See Duct Sizing in Attachment F2)	\$21,820
Adjusting factor for inflation from 2005 dollars to 2016 dollars (21.93% total increase)	1.2289
Inflation adjusted duct cost	\$26,815
The following cost data is taken from EPA Control Cost Manual, Sixth Edition (EPA/452/B-02-001).	
Direct Costs	
Base Equipment Costs (Ductwork) See Above	\$26,815
Instrumentation (not required)	-
Sales Tax - 3.06% of base equipment	\$ 821
Freight - 5% of base equipment	\$1,341
Purchased equipment cost (PEC)	\$28,977
Foundations & supports 8% (allowance already included in cost estimate)	-
Handling & erection 14% (already included in Eichleay cost estimate)	-
Electrical 4% (not required)	-
Piping 2% (not required)	-
Painting 1% (not required)	-
Insulation 1% of PEC	\$290
Direct Installation Costs (DIC)	\$ 290
Total Direct Costs (DC) (PEC + DIC)	\$29,267
Indirect Costs	
Engineering - 10% of PEC	\$2,898
Construction and field expenses - 5% of PEC	\$1,449
Contractor Fees - 10% of PEC	\$2,898
Start-up - 2% of PEC	\$ 580
Performance Test - 1% of PEC	\$ 290
Total Indirect Costs (IC)	\$8,115
Subtotal Capital Investment (SCI) (DC + IC)	\$37,382
Contingencies – 15% of SCI	\$5,607
Total Capital Investment (TCI) (SCI + Contingency)	\$42,989

Capital Cost Clean-In-Place (CIP) System

A ducting system on a tank farm must have this system to maintain sanitation and quality of the product. The cost of operation of the CIP system has not been estimated. Operation of a CIP system, using typical cleaning agents, will raise disposal and wastewater treatment costs. Most likely, these costs will be significant.

Capital Cost of Clean-In-Place (CIP) System of Ductwork for Wine Fermentation Tanks	
Cost Description	Cost (\$)
Current cost of CIP system (\$200,000)	\$200,000
The following cost data is taken from EPA Control Cost Manual, Sixth Edition (EPA/452/B-02-001).	
Direct Costs	
Base Equipment Costs (CIP System) See Above	\$200,000
Instrumentation - 10% of base equipment	\$20,000
Sales Tax - 3.06% of base equipment	\$6,120
Freight - 5% of base equipment	\$10,000
Purchased equipment cost (PEC)	\$236,120
Foundations & supports - 8% of PEC	\$18,890
Handling & erection - 14% of PEC	\$33,057
Electrical - 4% of PEC	\$9,445
Piping – accounted for in ductwork cost	-
Painting - 1% of PEC	\$2,361
Insulation - 1% of PEC	\$2,361
Direct Installation Costs (DIC)	\$66,114
Total Direct Costs (DC) (PEC + DIC)	\$302,234
Indirect Costs	
Engineering - 10% of PEC	\$23,612
Construction and field expenses - 5% of PEC	\$11,806
Contractor fees - 10% of PEC	\$23,612
Start-up - 2% of PEC	\$4,722
Performance test - 1% of PEC	\$2,361
Total Indirect Costs (IC)	\$66,113
Subtotal Capital Investment (SCI) (DC + IC)	\$368,347
Contingencies - 15% of SCI	\$55,252
Total Capital Investment (TCI) (SCI + Contingency)	\$423,599

Annualized Capital Costs

$$\begin{aligned}\text{Total capital costs} &= \text{Ductwork} + \text{CIP System} \\ &= \$42,989 + \$423,599 \\ &= \$466,588\end{aligned}$$

$$\text{Annualized Capital Investment} = \text{Initial Capital Investment} \times \text{Amortization Factor}$$

$$\text{Amortization Factor} = \left[\frac{0.1(1.1)^{10}}{(1.1)^{10} - 1} \right] = 0.163 \text{ per District policy, amortizing over 10 years at 10\%}$$

Therefore,

$$\text{Total Collection System Annualized Capital Investment} = \$466,588 \times 0.163$$

$$\text{Total Collection System Annualized Capital Investment} = \$76,054$$

Option 1 - Collection of VOCs and Control by Thermal Oxidation (88% collection & control):

Thermal Oxidizer Capital Cost

The applicant proposed a cost of \$61,132 for an RTO based off of a cost of \$383,640 for a larger system designed for 5,734 cfm and scaled down based off flow rate capacity as follows:

$$\$383,640 \times (267 \text{ cfm} / 5,734 \text{ cfm})^{0.6} = \$61,132$$

Since the proposed cost is less than the cost provided by Adwest Technologies, Inc for their smallest system in 2014 for \$145,500, the applicant's proposed cost of \$61,132 will be conservatively used.

Thermal Oxidation Capital Cost	
Cost Description	Cost (\$)
Regenerative Thermal Oxidizer cost	\$61,132
The following cost data is taken from EPA Control Cost Manual, Sixth Edition (EPA/452/B-02-001).	
Direct Costs	
Base Equipment Costs for Regenerative Thermal Oxidizer System (see above)	\$61,132
Instrumentation - 10% of base equipment	\$6,113
Sales Tax - 3.06% of base equipment	\$1,871
Freight - 5% of base equipment	\$3,057
Purchased equipment cost (PEC)	\$72,173
Foundations & supports - 8% of PEC	\$5,774
Handling & erection - 14% of PEC	\$10,104
Electrical - 4% of PEC	\$2,887
Piping – accounted for in ductwork cost	-
Painting - 1% of PEC	\$ 722
Insulation - 1% of PEC	\$ 722
PLC/Programming - 1 unit x \$10,000	\$10,000
Direct installation costs	\$30,209
Total Direct Costs (DC)	\$102,382
Indirect Costs	
Engineering - 10% of PEC	\$7,217
Contractor fees - 10% of PEC	\$7,217
Start-up 2% of PEC	\$1,443
Initial Source Testing - 1 unit x \$15,000/unit	\$15,000
Owner's Cost	\$1,298
Total Indirect Costs (IC)	\$32,175
Subtotal Capital Investment (SCI) (DC + IC)	\$134,557
Contingencies - 15% of SCI	\$20,184
Total Capital Investment (TCI) (SCI + Contingency)	\$154,741

Annualized Capital Costs

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

$$\text{Amortization Factor} = \left[\frac{0.1(1.1)^{10}}{(1.1)^{10} - 1} \right] = 0.163 \text{ per District policy, amortizing over 10 years at 10\%}$$

Therefore,

$$\text{Annualized Capital Investment} = \$154,741 \times 0.163 = \$25,223$$

Operation and Maintenance Costs

The Direct annual costs include labor (operating, supervisory, and maintenance), maintenance materials, electricity, and fuel.

Heat of Combustion for waste gas stream -dh(c):

$$\begin{aligned} \text{heat of combustion -dHc} &= 11,800 \text{ Btu/lb for ethanol} \\ \text{Daily VOC emissions rate} &= 188.7 \text{ lb/day} \\ \text{Blower flow rate} &= 267 \text{ scfm} \\ &= 384,480 \text{ ft}^3/\text{day} \end{aligned}$$

$$\begin{aligned} -dh(c) &= 188.7 \text{ lb/day} \times 11,800 \text{ Btu/lb} \div 384,480 \text{ ft}^3/\text{day} \\ &= 5.79 \text{ Btu/ft}^3 \end{aligned}$$

Assuming the waste gas is principally air, with a molecular weight of 28.97 and a corresponding density of 0.0739 lb/scf, the heat of combustion per pound of incoming waste gas is:

$$\begin{aligned} -dh(c) &= 5.79 \text{ Btu/ft}^3 \div 0.0739 \text{ lb/ft}^3 \\ &= 78.35 \text{ Btu/lb} \end{aligned}$$

Fuel Flow Requirement

$$Q(\text{fuel}) = \frac{P_w \cdot Q_w \cdot \{C_p \cdot [1.1 T_f - T_w - 0.1 T_r] - [-dh(c)]\}}{P(\text{ef}) \cdot [-dh(m) - 1.1 C_p \cdot (T_f - T_r)]}$$

Where

$$\begin{aligned} P_w &= 0.0739 \text{ lb/ft}^3 \\ C_p &= 0.255 \text{ Btu/lb-}^\circ\text{F} \\ Q_w &= 267 \text{ scfm} \\ -dh(m) &= 11,800 \text{ Btu/lb for ethanol} \\ T_r &= 77^\circ\text{F assume ambient conditions} \\ P(\text{ef}) &= 0.0408 \text{ lb/ft}^3, \text{ methane at } 77^\circ\text{F, 1 atm} \\ T_f &= 1,600^\circ\text{F} \\ T_w &= 1,525^\circ\text{F} \\ -dh(c) &= 78.35 \text{ Btu/lb} \end{aligned}$$

$$\begin{aligned} Q &= \frac{0.0739 \cdot 267 \cdot \{0.255 \cdot [1.1 \cdot 1,600 - 1,525 - 0.1 \cdot 77] - 78.35\}}{0.0408 \cdot [11,800 - 1.1 \cdot 0.255 \cdot (1,600 - 77)]} \\ &= -402 \div 464 = -0.9 \text{ ft}^3/\text{min} \end{aligned}$$

Since the fuel flow requirement results in a negative number, the RTO will be able to sustain sufficient temperature solely from the combustion of the waste gas (ethanol); therefore, no supplemental fuel will be required and there are no additional cost required for supplemental fuel.

Electricity Requirement

$$\text{Power}_{\text{fan}} = \frac{1.17 \times 10^{-4} Q_w \Delta P}{\epsilon}$$

Where

ΔP = Pressure drop Across system = 4 in. H₂O
 ϵ = Efficiency for fan and motor = 0.6
 Q_w = 267 scfm

$$\begin{aligned}\text{Power}_{\text{fan}} &= \frac{1.17 \times 10^{-4} * 267 \text{ cfm} * 4 \text{ in. H}_2\text{O}}{0.60} \\ &= 0.21 \text{ kW}\end{aligned}$$

Electricity Costs

Average cost of electricity to commercial users in California²:

2015 Average = \$0.1573/kWh

Electricity Cost = 0.21 kW x 24 hours/day x 90 days/year x \$0.1573/kWh = \$71.35/year

Total Operating and Maintenance Costs

Annual Costs (Based on: EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.2: VOC Destruction Controls, Chapter 2: Incinerators (September 2000), Table 2.10 - Annual Costs for Thermal and Catalytic Incinerators Example Problem. United States Environmental Protection Agency Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina 27711. EPA/452/B-02-001)³.

² Energy Information Administration/Electric Power; Average Retail Price of Electricity to Ultimate Customers by End-Use Sector, by State, 2015

<http://www.eia.gov/electricity/data/browser/#/topic/7?agg=0,1&geo=0000000000004&endsec=vg&freq=A&start=2001&end=2015&ctype=linechart<ype=pin&rtype=s&mtype=0&rse=0&pin=>

³ <http://epa.gov/ttn/catc/dir1/cs3-2ch2.pdf>

Thermal Oxidizer Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 3 shift/day x 90 days/year x 1 unit	\$2,498
Supervisor	15% of operator		\$375
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 3 shift/day x 90 days/year x 1 unit	\$2,498
Maintenance	100% of labor		\$2,498
Utility			
Natural Gas	see calculation above		\$0
Electricity	see calculation above		\$71
Total DAC			\$7,940
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$2,498 + \$375 + \$2,498 + \$2,498)	\$4,721
Administrative	2% of TCI		\$3,095
Property Taxes	1% of TCI		\$1,547
Insurance	1% of TCI		\$1,547
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$25,910
Annual Operating Cost (DAC + IAC)			\$33,850

Total Annual Cost

$$\begin{aligned}
 \text{Total Annual Cost} &= \text{Regenerative Thermal Oxidizer System} + \text{Annual Cost} + \text{Ductwork/CIP Cost} \\
 &= \$25,223 + \$33,850 + \$76,054 \\
 &= \$135,127
 \end{aligned}$$

Emission Reductions

$$\begin{aligned}
 \text{Annual Emission Reduction} &= \text{Fermentation Emissions} \times 0.88 \\
 &= 7,486 \text{ lb-VOC/year} \times 0.88 \\
 &= 6,588 \text{ lb-VOC/year} \\
 &= 3.3 \text{ tons-VOC/year}
 \end{aligned}$$

Cost Effectiveness

Cost Effectiveness = Total Annual Cost ÷ Annual Emission Reductions

$$\begin{aligned}\text{Cost Effectiveness} &= \$135,127/\text{year} \div 3.3 \text{ tons-VOC/year} \\ &= \$40,948/\text{ton-VOC}\end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the regenerative thermal oxidizer system, collection system ductwork and CIP equipment alone results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 2 - Collection of VOCs and Control by Carbon Adsorption (86% collection and control):

Design Basis

- Additional costs which were conservatively not evaluated in the cost analysis below include but are not limited to:
 - The cost for a tank to collect the condensed ethanol laden steam from regeneration of the carbon bed.
 - Annual steam costs required to regenerate the carbon beds.
 - Annual cooling water costs required to condense the ethanol laden steam from regeneration of the carbon beds and the condenser equipment.
 - Electricity costs of system fans, bed drying/cooling fans and cooling water pumps.
- Ethanol laden water is a byproduct produced when the carbon is regenerated with steam and the ethanol laden steam is condensed. The collected ethanol laden water will need to be disposed of and can be a significant cost; however, conservatively, the costs will not be included at this time.

Capital Cost for Carbon Adsorption Equipment

The District contacted suppliers of carbon adsorption systems to obtain cost estimates for a system designed to handle the total flow rate from the fermentation tanks being proposed under this project. However, as of the time of this analysis, the District has not yet received replies from the carbon adsorption system suppliers. Therefore the equipment cost for carbon adsorption system used in this analysis will be based on the cost of a budgetary estimate of \$20,000 to \$25,000 for a 50 cfm carbon containment system, including an inline filter, blower, exhaust silencer and air to air heat exchanger and a cost estimate supplied by David Drewelow of Drewelow Remediation Equipment, Inc. on February 3, 2015 of \$80,000 to \$85,000 for a 1,000 cfm carbon containment system. Interpolating between these estimates results in a cost estimate of \$33,705 to \$38,705 for a carbon containment system that can handle 267 cfm; therefore, for purposes of this analysis a cost of \$33,705 will be used for the equipment for a carbon adsorption system that can handle the total exhaust from all tanks.

Capital Cost for Carbon for System

$$\begin{aligned}\text{Annual Emission Reduction} &= \text{Fermentation Emissions} \times 0.86 \\ &= 7,486 \text{ lb-VOC/year} \times 0.86 \\ &= 6,438 \text{ lb-VOC/year}\end{aligned}$$

Assume a working bed capacity of 20% for carbon (weight of vapor per weight of carbon)

$$\begin{aligned}\text{Carbon required} &= 6,438 \text{ lb-VOC/year} \times 1/0.20 \\ &= 32,190 \text{ lb carbon}\end{aligned}$$

David Drewelow also provided a cost of \$1.25/lb of carbon which does not include any delivery or servicing fees.

$$\text{Annual carbon cost} = \$1.25/\text{lb} = \$1.25/\text{lb} \times 32,190 \text{ lb carbon} = \$40,238$$

Carbon Adsorption Capital Cost		
Cost Description	Equipment Cost (\$)	Carbon Cost (\$)
Carbon Adsorption System Cost (see above)	\$33,705	-
Water alcohol tank cost (not included)	-	-
Carbon Capital Cost (see above)	-	\$40,238
The following cost data is based on the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002) (EPA/452/B-02-001).		
Direct Costs		
Base Equipment Costs (Carbon Adsorption System + Water Alcohol Tank + Carbon) See Above	\$33,705	\$40,238
Instrumentation - 10% of base equipment	\$3,371	-
Sales Tax - 3.06% of base equipment	\$1,031	\$1,332
Freight - 5% of base equipment	\$1,685	\$2,012
Purchased Equipment Cost (PEC)	\$39,792	\$43,582
Foundations & supports - 8% of PEC	\$3,183	-
Handling & erection - 14% of PEC	\$5,571	-
Electrical - 4% of PEC	\$1,592	-
Piping – accounted for in ductwork cost	-	-
Painting - 1% of PEC	\$398	-
Insulation - 1% of PEC	\$398	-
PLC/Programming - 1 unit x \$10,000	\$10,000	-
Direct installation costs	\$21,142	\$0
Total Direct Costs (DC)	\$60,934	\$43,582
Indirect Costs		
Engineering - 10% of PEC	\$3,979	-
Construction and field expenses - 5% of PEC	\$1,990	-
Contractor fees - 10% of PEC	\$3,979	-
Start-up - 2% of PEC	\$796	-
Initial Source Testing - 1 unit x \$15,000/unit	\$15,000	-
Owner's Cost	\$1,298	-
Total Indirect Costs (IC)	\$27,042	\$0
Subtotal Capital Investment (SCI) (DC + IC)	\$87,976	\$43,582
Contingencies - 15% of SCI	\$13,196	
Total Capital Investment (TCI) (SCI + Contingency)	\$101,172	\$43,582

Annualized Capital Cost for Carbon Adsorption Equipment

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

$$\text{Amortization Factor} = \left[\frac{0.1(1.1)^{10}}{(1.1)^{10} - 1} \right] = 0.163 \text{ per District policy, amortizing over 10 years at 10\%}$$

Therefore,

$$\text{Annualized Capital Investment for Carbon Adsorption Equipment} = \$101,172 \times 0.163 = \$16,491$$

Annualized Cost for Carbon for System

The EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.1: VOC Recapture Controls, Chapter 1: Carbon Adsorbers (September 1999)⁶ states, “A typical life for the carbon is five years. However, if the inlet contains VOCs that are very difficult to desorb, tend to polymerize, or react with other constituents, a shorter carbon lifetime—perhaps as low as two years—would be likely.”

Assuming the maximum carbon life of five years and a 10% interest rate the capital recovery cost for the carbon =

$$\left[\frac{0.1(1.1)^5}{(1.1)^5 - 1} \right] = 0.264 \text{ over 5 years at 10\% interest}$$

Therefore,

$$\text{Annualized Capital Investment for Carbon for System} = \$43,582 \times 0.264 = \$11,506$$

Annualized Cost of Carbon Adsorption Equipment + Annualized Cost of Carbon for System

$$\text{Annualized Capital Cost for Carbon Adsorption System} = \$16,491 + \$11,506 = \$27,997$$

Total Operation and Maintenance Costs

The annual operation and maintenance costs for the carbon adsorption system are based on the information given in the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.1: VOC Recapture Controls, Chapter 1: Carbon Adsorbers (September 1999)⁷. No value will be given for the ethanol that may be potentially recovered since this ethanol could actually result in additional disposal costs, which will also not be quantified in this analysis.

⁶ EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.1: VOC Recapture Controls, Chapter 1: Carbon Adsorbers (September 1999). United States Environmental Protection Agency Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina 27711, EPA/452/B-02-001, <http://epa.gov/ttn/catc/dir1/cs3-1ch1.pdf>.

Carbon Adsorption Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 3 shift/day x 90 days/year x 1 unit	\$2,498
Supervisor	15% of operator		\$375
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 3 shift/day x 90 days/year x 1 unit	\$2,498
Maintenance	100% of labor		\$2,498
Utility			
Natural Gas from Steam Production (not included)			-
Electricity (not included)			-
Total DAC			\$7,869
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$2,498 + \$375 + \$2,498 + \$2,498)	\$4,721
Administrative	2% of TCI		\$2,023
Property Taxes	1% of TCI		\$1,012
Insurance	1% of TCI		\$1,012
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$23,768
Annual Cost (DAC + IAC)			\$31,637

Total Annual Cost for Carbon Adsorption

$$\begin{aligned}
 \text{Total Annual Cost} &= (\text{Carbon Adsorption Capital Cost} + \text{Carbon Cost}) + \text{Annual Operating Cost} + \\
 &\quad \text{Ductwork/CIP Cost} \\
 &= (\$27,997) + \$31,637 + \$76,054 \\
 &= \$135,688
 \end{aligned}$$

Emission Reductions

$$\begin{aligned}
 \text{Annual Emission Reduction} &= \text{Fermentation Emissions} \times 0.86 \\
 &= 7,486 \text{ lb-VOC/year} \times 0.86 \\
 &= 6,438 \text{ lb-VOC/year} \\
 &= 3.2 \text{ tons-VOC/year}
 \end{aligned}$$

Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} \div \text{Annual Emission Reductions}$$

$$\begin{aligned}\text{Cost Effectiveness} &= \$135,688/\text{year} \div 3.2 \text{ tons-VOC/year} \\ &= \$42,403/\text{ton-VOC}\end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the carbon adsorption system and collection system ductwork and CIP equipment results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 3 - Collection of VOCs and Control by Absorption/Scrubber (81% collection & control):

Design Basis

- Although the NohBell Corporation (NohBell) scrubber (NoMoVo) units have not been demonstrated at the scale of operation as proposed by this project, the District will conservatively assume that the equipment and cost proposed by NohBell will meet the duty requirements for the project.
- Recovered ethanol storage tank = \$40,000 (installed, as proposed in Project C-1133347)
- Connected electrical load is 2.5 horsepower which is assumed to operate continuously for 90 days.
- Electric power cost = \$0.1573/kWh (see RTO Top Down BACT Analysis section above)
- Captured ethanol is recovered as a 10% solution suitable for disposal to an ethanol distillery at a cost of \$0.08 per gallon per NohBell
- Since the EPA Control Cost Manual does not contain a section for wet scrubbers controlling VOCs, conservatively, the costs in addition to the base equipment costs, will be estimated from the Wet Scrubbers for Particulate Matter control from the EPA Control Cost Manual.

Equipment Cost Scrubber

Pricing for the NoMoVo unit will be based on project specific pricing received from NohBell on October 20, 2016.

In addition to the base equipment cost, NohBell also provided cost for "airduct to tanks" at 80 feet in length and \$125/foot for a total of \$10,000. The cost of the duct alone is conservatively higher than the District's calculated value of \$6,315 shown above in the "Capital Cost of Ductwork" section; therefore, the District's calculated cost will conservatively be used in addition to the other necessary items of a functional ducting system such as a knock out drum, a disconnect spool and various valves and fittings as calculated in the "Capital Cost of Ductwork" section above.

Since not all annual cost were not supplied (which includes both direct and indirect costs, testing, maintenance, overhead and administration), they will be taken from other sources such as the EPA Control Cost Manual, Sixth Edition (EPA/452/B-02-001). Since the EPA Control Cost Manual does not contain a section for wet scrubbers controlling VOCs, conservatively, the costs in addition to the base equipment costs, will be estimated from the Wet Scrubbers for Particulate Matter control from the EPA Control Cost Manual.

Scrubber Capital Cost	
Cost Description	Cost (\$)
Scrubber System including pump cart and connection to glycol system	\$69,500
The following cost data is taken from EPA Control Cost Manual, Sixth Edition (EPA/452/B-02-001).	
Direct Costs	
Base Equipment Costs (Scrubber System) See Above	\$69,500
Instrumentation - 10% of base equipment	\$6,950
Sales Tax – 3.06 % of base equipment	\$2,127
Freight - 5% of base equipment	\$3,475
Purchased Equipment Cost (PEC)	\$82,052
Foundations & supports – 6% of PEC	\$4,923
Handling & erection - 2% of PEC per Project C-1133347	\$1,641
Electrical - per NohBell	\$1,200
Piping - accounted for in ductwork cost	-
Painting - 1% of PEC	\$821
Insulation - 3% of PEC	\$2,462
PLC/Programming - \$10,000 x 1 tank group	\$10,000
Recovered Ethanol Storage Tank (installed) (\$40,000)	\$40,000
Direct Installation Costs (DIC)	\$61,047
Direct Costs (DC) (PEC + DIC)	\$143,099
Indirect Costs	
Engineering - 10% of PEC	\$8,205
Construction and field expenses - 10% of PEC	\$8,205
Contractor fees - 10% of PEC	\$8,205
Start-up - 1% of PEC	\$ 821
Initial Source Testing - 1 unit x \$15,000/unit	\$15,000
Owner's Cost	\$1,298
Indirect Costs (IC)	\$41,734
Subtotal Capital Investment (SCI) (DC + IC)	\$184,833
Contingencies - 15% of SCI	\$27,725
Total Capital Investment (TCI) (SCI + Contingency)	\$212,558

Annualized Capital Costs

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

$$\text{Amortization Factor} = \left[\frac{0.1(1.1)^{10}}{(1.1)^{10} - 1} \right] = 0.163, \text{ amortizing over 10 years at 10\%}$$

Therefore,

$$\text{Annualized Capital Investment} = \$212,558 \times 0.163 = \$34,647$$

Wastewater Disposal Costs

Additionally, the water scrubber will generate ethanol-laden wastewater containing 6,064 lbs-ethanol annually (7,486 lb/year (uncontrolled fermentation emissions) $\times$ 0.81). Assuming a 10% solution, approximately 9,160 gallons of waste water (6,064 lbs-ethanol $\times$ gal/6.62 lb $\div$ 0.10) will be generated annually. An allowance of \$0.08 per gallon is applied for disposal costs.

$$\text{Annual disposal costs} = 9,160 \text{ gallons} \times \$0.08/\text{gallon} = \$733$$

Total Operation and Maintenance Costs

Scrubber Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	$\$18.50/\text{hr} \times 0.5 \text{ hr/shift} \times 3 \text{ shift/day} \times 90 \text{ days/year} \times 1 \text{ system}$	\$2,498
Supervisor	15% of operator		\$375
Maintenance			
Labor	0.5 h/shift	$\$18.50/\text{hr} \times 0.5 \text{ hr/shift} \times 3 \text{ shift/day} \times 90 \text{ days/year} \times 1 \text{ system}$	\$2,498
Maintenance	100% of labor		\$2,498
Wastewater Disposal			
	10% Solution = 8,269 gal	\$0.08/gal	\$733
Utility			
Electricity	$2.5 \text{ hp} \times 0.746 \text{ kW/hp} \times 2,160 \text{ hr/yr} = 4,028 \text{ kWh/yr}$	\$0.1573/kWh	\$634
Total DAC			\$9,236
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	$0.6 \times (\$2,498 + \$375 + \$2,498 + \$2,498)$	\$4,721
Administrative	2% of TCI		\$4,252
Property Taxes	1% of TCI		\$2,126
Insurance	1% of TCI		\$2,126
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$28,225
Annual Cost (DAC + IAC)			\$37,461

$$\begin{aligned} \text{Total Annual Cost} &= \text{Scrubber Capital Cost} + \text{Annual Operating Cost} + \text{Ductwork/CIP Cost} \\ &= \$34,647 + \$37,461 + \$76,054 \\ &= \$148,162 \end{aligned}$$

Emission Reductions

The District's BACT Guideline identifies an overall collection and control efficiency of 81% for absorption systems.

$$\begin{aligned}\text{Annual Emission Reduction} &= \text{Uncontrolled Fermentation Emissions} \times 0.81 \\ &= 7,486 \text{ lb-VOC/year} \times 0.81 \\ &= 6,064 \text{ lb-VOC/year} \\ &= 3.0 \text{ tons-VOC/year}\end{aligned}$$

Cost Effectiveness

Cost Effectiveness = Total Annual Cost ÷ Annual Emission Reductions

$$\begin{aligned}\text{Cost Effectiveness} &= \$148,162/\text{year} \div 3.0 \text{ tons-VOC/year} \\ &= \$49,387/\text{ton-VOC}\end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the water scrubber and annual costs results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 4 - Capture of VOCs and Condensation (81% collection & control):

Design Basis

- Although the EcoPAS LLC (EcoPAS) condenser (PAS) units have not been demonstrated at the scale of operation as proposed by this project, the District will conservatively assume that the equipment and cost proposed by EcoPAS will meet the duty requirements for the project.
- Additional costs which were conservatively not evaluated in the cost analysis below include but are not limited to:
 - Glycol chiller system.
- This control technology recovers ethanol which potentially requires additional cost to dispose of. The District currently knows of two winery facilities that recover ethanol: Central Coast Wine Services and Terravant Winery, both located within the Santa Barbara County. Information from the Santa Barbara County APCD indicates that neither facility generates any revenue from the recovered ethanol. Central Coast Wine Services sends their recovered ethanol to a facility in San Luis Obispo that refines the recovered ethanol into motor vehicle fuels and Terravant Winery utilizes a UV system to destroy the ethanol. Although EcoPAS claims that there is value in the recovered ethanol in a future market that may be developed, the District will conservatively assume that there is no cost required to dispose/treat the recovered ethanol nor is there a value in the recovered ethanol.

Equipment Cost Refrigerated Condenser

Pricing for the PAS units will be based on project specific pricing received from EcoPAS on October 14, 2016.

In addition to the base equipment cost of \$132,000, EcoPAS also provided cost for direct and indirect expenses and annual expenses associated with a condenser system.

The cost provided by EcoPAS will be utilized with the exception of the following items:

- It was stated that the ducting cost would be \$56,160. As discussed above, the District performed a cost survey of stainless steel ducting/piping and compared those costs to the costs stated in the Eichleay report and used a ducting/piping layout as shown in Attachment B2. Since no additional details were provided for EcoPAS's estimate and no layout was provided, the District's cost will be used.
- It was stated that the instrumentation costs are \$0 because "the proposed PAS-50 system includes instrumentation for monitoring temperature, pressure, flow, and fluid levels". EPA's Control Cost Manual, Sixth Edition (EPA/452/B-02-001) states that for instrumentation factors, "...if the control is intermittent and/or requires safety backup instrumentation, the higher end of the range would be applicable." Since the control device will be required to capture emissions at a wide range of flow rates as the emissions increase over time and then eventually taper back off and because of the sensitivity of the final product (wine) to any backpressure, it is expected that instrumentation costs on the facility's tanks would be significant in addition to the instrumentation costs provided by the vendor on the control device system. Therefore, as recommended in EPA's Control Cost Manual, instrumentation costs will be estimated at 10% of the base equipment cost.
- Foundations and supports are stated to be \$0 because the "PAS units are skid-mounted with all required supports." Although all costs for supports are included in the base equipment price, it is expected that the facility will require site preparation and a foundation for the skid mounted equipment to be placed upon; therefore, since only half of the category (foundations and not supports) is still required to be accounted for, only half of the recommended allowance (14% of the base equipment cost) for the category will be used (or 7% of the base equipment cost).
- PLC Programming is stated to be \$0 because the "PAS system does not require external programmable logic controllers. All instrumentation data (above) is available to the facility manager via industrial current loop or other communication interface (TBD)." Although the information is available at the control device system, that information needs to be incorporated into the facility's existing PLC system and safety measures need to be incorporated into the control device system should any of the critical parameters to winemaking start to become adversely affected by the control device. Therefore, the PCL cost stated above under "All Control Options" will be included as costs in addition to the equipment/information provided by the control device system manufacturer is expected to be incurred by the facility.
- Engineering, construction & field expenses, and contractor fees are stated to be \$0 because "EcoPAS is a licensed HVAC and Mechanical engineering contractor, and for a project of this size, installation is included in the purchase price." EPA's Control Cost Manual explains that construction and field expenses are "costs for construction supervisory personnel, office personnel, rental of temporary offices, etc." and contractor fees are "for construction and engineering firms involved in the project." It is expected that during any construction project at the facility that supervisory and office

personnel would be required to coordinate construction activities and for any installation of a system not demonstrated to have been previously successfully installed that engineering costs would be incurred by the facility. Therefore, the recommended engineering, construction & field expenses, and contractor fees will be included in the cost estimate as recommended by EPA's Control Cost Manual.

- As an indirect cost, the source testing amount was estimated to be \$5,000 without any justification. Since this responsibility will be upon the facility and as previously discussed, due to the unsteady state operation of fermentation tanks, the initial source testing cost is estimated to be \$15,000.
- The proposed control device system has not been installed at a winery of this magnitude previously nor has demonstrated to been able to control emissions from a wine fermentation process over the entire process which may require a facility to significantly alter its traditional wine making processes and may result in production-related costs to the owner. Since this would be the first installation of this control technology at a large winery, and would likely require significant redesign of wine fermentation tanks as well as the manner in which ingredients are added and recirculated in the fermentation tanks, a significant amount should be estimated for contingencies. Furthermore, the contingency cost utilized in the District's application review of 15% of the subtotal capital investment is based on reasonable estimates published by the Association for the Advancement of Cost Engineering International and the Electric Power Research Institute. Therefore, the District believes it is reasonable and appropriate to include this amount of costs in this analysis.
- It is stated the direct annual costs include operator cost at \$3,300; however, no justification was provided. Therefore, the District will assume ½ hr per shift (as did EcoPAS) at \$18.50/hr for 3 shifts/day for 90 days which yields \$2,498.
- It is stated that the maintenance labor and materials is expected to be \$0. The District expects cost to be incurred by the facility for maintenance personnel to be available during any maintenance performed by the vendor or to schedule such maintenance to be performed by the vendor as well as any maintenance required on the system other than the control device. It is expected that specific tools and materials for this new never-before-installed equipment will be required by the facility for equipment outside of the vendor's responsibility. Therefore, maintenance labor and materials, as recommended by EPA's Control Cost Manual will be included in the cost estimate.
- It is stated that the "cost of annual source testing will be paid by EcoPAS" and the cost to the facility is \$0. Typically the cost of source testing control devices is the sole responsibility of the facility. Nevertheless, it is estimated that annual source testing would be \$15,000. While annual source tests would be required for the 10 year lifespan of the equipment totaling \$150,000, the capital cost of the equipment is only quoted by EcoPAS as \$132,000 resulting in a loss of profit. It is plausible that this loss could be sustained for this single installation; however, the ability of a company to sustain such a loss industry-wide, should this system become achieved-in-practice, is questionable. Therefore, the burden of annual source testing will be placed on the facility for this analysis.
- It is stated that EcoPAS believes that a CIP system is an optional and unnecessary cost for collection of winery VOCs. As stated above and in the District's response to public comments in projects N-1142303, N-1143210, N-1153192 and N-1152244, the District believes it is both reasonable and appropriate to utilize a CIP system for any emission control installation at a large winery and has therefore included the cost for such a system in the cost estimate.
- In addition to the cost estimate, EcoPAS states

The District has requested that we estimate the control capabilities for maximum daily VOC emissions, calculated as if all tanks went through an entire fermentation cycle every 24 hours. We have also noted that, for the purposes of evaluating control cost effectiveness, the District will use

annual VOC emissions based on a total of 20 turns of red wine per year. This method overestimates the effective cost/ton, since it uses one emissions rate for the cost/numerator (the max. daily rate assuming all tanks turn once/day), and a different (~90% lower rate) for tons captured/denominator (annual rate assuming a total of 20 turns/year).

We assume the applicant is requesting the flexibility to ferment in any of the tanks, but mostly intends to use the tanks for storage. The ~1 turn value implied by the max. annual emissions limit would equate to using each tank for fermentation once/year, and subsequently storing the wine in place for the balance of the year. In this scenario, given the asynchronous nature of the harvest (and crush pad throughput limitations), the average flow would likely be far lower than the maximum daily emissions described by the highly unlikely “all tanks, synchronously completing fermentation in 24 hours” model. However, it is difficult to estimate the actual control requirements in the absence of more detailed usage information.

Nevertheless, the methodology used to determine annual VOC emissions is a crucial sensitivity when calculating cost effectiveness. As the following table shows, assuming the total annual cost (TAC) is fixed, various estimation methods yield an effective cost/ton that ranges from \$1,686/ton to \$17,056/ton:

Annual VOC Emissions Estimation Method	Tons/year	Cost/Ton (Using \$46,973 TAC)	Total Annual Cost (Staying at < \$15K/ton)
Daily x 365 (traditional method of max daily X 365 days)	34.4	\$1,686	\$417,932
Daily x 90 (the crush season is roughly 90 days long)	8.5	\$6,823	\$103,268
Applicant Request	3.4	\$17,056	\$41,307

Also, as the last column illustrates, under the District's current cost effectiveness targets, a facility operator could “afford” to pay anywhere from \$400,000+ per year to ~\$41,000 per year.

A control device required as BACT would be required to control at the minimum control efficiency for all stages of the fermentation cycle including the minimum and maximum flow rates. The District understands the difficulties associated with such a task; however, the BACT analysis is calculated based on potentials to emit and not actual emission rates.

- EcoPAS also raised the question of whether a centralized system or distributed system would be optimal. The District has performed a project specific analysis and made the determination presented in this project.
- EcoPAS has also stated:

The San Joaquin Valley Policy APR-1305 recommends a default CRF of 0.1627, for interest rate stating “use 10%, or demonstrate why alternate is more representative of the specific operation,” and for useful life stating “assume 10 years, or demonstrate why alternate is more representative of the specific operation.” In this case, it is clear that alternates are more representative, both in the case of useful life and in the case of interest rate.

For **interest rate**, one example of a more representative value would be the ARB Carl Moyer program discount rate, which was 2.0% in 2012, 1.0% in 2013-14, and revised back to 2.0% in 2015-16. Quoting from the current Moyer Guidelines, “To update these values for use in 2016, the average rates of return for U.S. Treasury securities and the California Consumer Price Index data

available at the time of publication (January to September 2015) were used. The newly derived factors are shown in Tables G-1 and G-2f. Based on these values, the discount rate remains at two percent and the capital recovery factors (as shown in Table G-3a) and truncated cost-effectiveness limit of \$18,260 are in effect for contracts executed by air districts beginning January 1, 2016."

Passive chillers are routinely expected to deliver 20-30 years of **useful life**. Given the stainless steel construction, and general lack of moving parts, this is especially true for the PAS units. (Ductwork is also routinely rated at 30-year useful life). For a condenser-based control system, using a useful life of 20 years in the CRF calculations would be considered conservative. A 20-yr/2%-interest CRF would be 0.061 (vs. 0.163).

Since essentially the formation of the San Joaquin Valley Air Pollution Control District in the early 1990's, the District has consistently used a 10% discount rate and a 10 year equipment life in cost effectiveness calculations. These are the standard default values listed in District Policy APR-1305 Although APR-1305 allows consideration of other values for these parameters, to the District's knowledge, no other values have ever been used in any District analysis. A 10% discount rate and a 10 year equipment life represent financially conservative values consistent with the District's conservative and cautionary approach when imposing new controls (with substantial technical and socio-economic unknowns) on businesses in the San Joaquin Valley. Given the District's consistent history of using only the conservative default values, the District would be irresponsible to implement significantly different values for a specific project. While the values may not reflect current economic conditions, the District would only implement changes in the precedent-based use of APR-1305 after substantial study of the socio-economic impact and public input. The District has used the appropriate discount rate and equipment life for this project based on established precedent and a conservative approach with respect to imposing new technology on businesses in the San Joaquin Valley.

The cost table from the EPA Control Cost Manual, Sixth Edition (EPA/452/B-02-001) for refrigerated condensers will be used as a guide and populated with vendor specific information as available.

Condensation Capital Cost	
Cost Description	Cost (\$)
Cost of Refrigerated Condenser system	\$132,000
The following cost data is taken from EPA Control Cost Manual, Sixth Edition (EPA/452/B-02-001).	
Direct Costs	
Base Equipment Costs (Condenser) See Above	\$132,000
Instrumentation - 10% of base equipment	\$13,200
Sales Tax - 3.06% of base equipment	\$4,039
Freight - per EcoPAS	\$1,320
Purchased equipment cost (PEC)	\$150,559
Foundations - 7% since supports are included in EcoPAS's base equipment cost	\$9,240
Handling & erection - per EcoPAS	\$5,491
Electrical - per EcoPAS	\$4,118
Piping – accounted for in ductwork cost	-
Painting - per EcoPAS	\$0
Insulation - per EcoPAS	\$0
PLC & Programming - 1 unit x \$10,000	\$10,000
Direct Installation Costs (DIC)	\$28,849
Total Direct Costs (DC) (PEC + DIC)	\$179,408
Indirect Costs	
Engineering - 10% of PEC	\$15,056
Construction and field expenses - 5% of PEC	\$7,528
Contractor fees - 10% of PEC	\$15,056
Start-up - per EcoPAS	\$2,746
Source Testing - 1 unit x \$15,000/unit	\$15,000
Owner's Cost	\$1,298
Total Indirect Costs (IC)	\$56,684
Subtotal Capital Investment (SCI) (DC + IC)	\$236,092
Contingencies - 15% of SCI	\$35,414
Total Capital Investment (TCI) (DC + IC)	\$271,506

Annualized Capital Costs

Annualized Capital Investment = Initial Capital Investment x Amortization Factor

$$\text{Amortization Factor} = \left[\frac{0.1(1.1)^{10}}{(1.1)^{10} - 1} \right] = 0.163, \text{ amortizing over 10 years at 10\%}$$

Therefore,

Annualized Capital Investment = \$271,506 x 0.163 = \$44,255

Total Operation and Maintenance Costs

Condensation Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 3 shift/day x 90 days/year x 1 system	\$2,498
Supervisor	15% of operator		\$375
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 3 shift/day x 90 days/year x 1 system	\$2,498
Maintenance	100% of labor		\$2,498
Chiller (Glycol)			
Not included at this time			-
Utility (Electricity)			
Not included at this time			-
Total DAC			\$7,869
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$2,498 + \$375 + \$2,498 + \$2,498)	\$4,721
Administrative	2% of TCI		\$5,430
Property Taxes	1% of TCI		\$2,715
Insurance	1% of TCI		\$2,715
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$30,581
Annual Cost (DAC + IAC)			\$38,450

Total Annual Cost = Condenser Capital Cost + Annual Operating Cost + Ductwork/Piping Cost
 = \$44,255 + \$38,450 + \$76,054
 = \$158,759

Emission Reductions

EcoPAS has indicated the PAS unit is capable of achieving a capture and control efficiency of 90%. However, the District's current BACT Guideline identifies a combined capture and control efficiency of 81% for condensation technology. The capture and control efficiency of 81% will be used in this analysis as the value of 90% has yet to be shown to be feasible.

Annual Emission Reduction = Uncontrolled Fermentation Emissions x 0.81
= 7,486 lb-VOC/year x 0.81
= 6,064 lb-VOC/year
= 3.0 tons-VOC/year

Cost Effectiveness

Cost Effectiveness = Total Annual Cost ÷ Annual Emission Reductions

Cost Effectiveness = \$158,759/year ÷ 3.0 tons-VOC/year
= \$52,920/ton-VOC

The analysis demonstrates that the annualized purchase cost of the refrigerated condenser system and annual costs results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 5 - Temperature Controlled Open Top Tank with Maximum Average Fermentation Temperature of 95 deg F):

The only remaining control option in step 3 above has been deemed AIP for this class and category of source and per the District BACT policy is required regardless of the cost. Therefore, a cost effectiveness analysis is not required.

Step 5 – Select BACT

All identified feasible options with control efficiencies higher than the option proposed by the facility have been shown to not be cost effective. The facility has proposed Option 1, temperature-controlled open top tank with maximum average fermentation temperature of 95 deg F. These BACT requirements will be placed on the permits as enforceable conditions.

Attachment B1

Achieved-in-Practice Analysis

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT MEMO

DATE: February 9, 2015 (Revised May 9, 2016)

TO: Dave Warner, Deputy APCO

FROM: Nick Peirce, Permit Services Manager
James Harader, Senior Air Quality Engineer
Jag Kahlon, Air Quality Engineer

SUBJECT: Achieved in Practice Analysis for Emission Control Technologies
Used to Control VOC Emissions from Wine Fermentation Tanks

Introduction

The purpose of this analysis is to determine whether there is any control technologies that can be considered to be Achieved in Practice BACT for controlling fermentation VOC emissions from wine fermentation tanks. If determined to be achieved in practice, the San Joaquin Valley Air Pollution Control District (District) would require the use of such technology for wine fermentation tanks when BACT is triggered, without any consideration of the cost effectiveness of the control technology. The District's achieved in practice BACT is functionally equivalent to Federal EPA's Lowest Achievable Emission Rate requirements outlined in Federal Non-Attainment NSR documents.

LAER

The emission control requirement for new Major Sources and Federal Major Modifications in non-attainment areas is that the emission units meet the lowest achievable emission rate (LAER). LAER is the most stringent emission limitation from either of the following:

1. The most stringent emission limitation contained in the implementation plan of any State for such class and category of source; or
2. The most stringent emission limitation achieved in practice by such class or category of source.

In no event can the LAER requirement be less stringent than Federal New Source Performance Standards (NSPS), if there is an NSPS applicable to the type of source being evaluated.

In the case of wine fermentation tanks, the District did not identify any SIP that would require the use of add-on control systems. Therefore, add-on control

systems can only be required as LAER for wine fermentation if they are determined to be achieved in practice for the source category.

Achieved in Practice Criteria

The term "achieved in practice" appears to be subject to interpretation since it is not defined in the federal statutes or regulations. As a result, there are few objective regulatory criteria to constrain the form of an achieved in practice determination. The following discussion outlines the achieved in practice criteria that is used by the District for determining LAER.

In a February 28, 1989 memorandum titled "Guidance on Determining Lowest Achievable Emission Rate (LAER), EPA provided the following guidance concerning the economic feasibility of LAER:

Traditionally, little weight has been given to economics in LAER determinations, and this continues to be the case. The extract in your memorandum from the record of the House and Senate discussion of the Clean Air Act (Act) contains the sentence:

"If the cost of a given control strategy is so great that a new major source could not be built or operated, then such a control would not be achievable and could not be required by the Administrator."

We interpret this statement in the record to be used in a generic sense. That is, that no new plants could be built in that industry if emission limits were based on levels achievable only with the subject control technology. However, if some other plant in the same (or comparable) industry uses that control technology, then such use constitutes de facto evidence that the economic cost to the industry of that technology control is not prohibitive. Thus, for a new source in that same industry, LAER costs should be considered only to the degree that they reflect unusual circumstances which, in some manner, differentiate the cost of control for that source from the costs of control for the rest of that industry. These unusual circumstances should be thoroughly analyzed to ensure that they really do represent compelling reasons for not requiring a level of control that similar sources are using. Therefore, when discussing costs, applicants should compare the cost of control for the proposed source to the costs for source(s) already using that level of control.

The statement "If some other plant in the same (or comparable) industry uses that control technology, then such use constitutes de facto evidence that the economic cost to the industry of that technology control is not prohibitive" is only true if the plant using that control technology purchased or leased that control technology. Scenarios where the purchase/lease of the control technology was

subsidized with grant money, or where the plant allowed the control vendor to operate and test their equipment on-site without actually purchasing/leasing the control technology do not constitute evidence that the economic cost to the industry due to use of that technology control is not prohibitive. Therefore, the District's historical position is that a control technology must have been purchased or leased by the plant in order for that installation of the control technology to be considered as achieved in practice.

EPA Region IX has previously stated that the successful operation of a new control technology for six months constitutes achieved in practice. This position was established in an August 25, 1997 letter from David Howekamp of US EPA Region IX to Moshen Nazemi of South Coast Air Quality Management District. This guidance is reflected in the South Coast Air Quality Management District's BACT Policy, which includes the following criteria for determining whether a control technology is achieved in practice:

Reliability: All control technologies must have been installed and operated reliably for at least six months. If the operator did not require the basic equipment to operate daily, then the equipment must have at least 183 cumulative days of operation. During this period, the basic equipment must have operated: 1) at a minimum of 50% design capacity; or 2) in a manner that is typical of the equipment in order to provide an expectation of continued reliability of the control technology.

For wine fermentation tanks, the District has taken the position that successful operation of a control device for one full fermentation season is satisfactory for qualifying a control as achieved in practice. The requirement of one full fermentation season is considerably more conservative than the 6-month requirement, since the fermentation season typically lasts only two to three months.

The term "successful operation" is not tightly defined. The District considers the following when determining whether a control technology has been successfully operated for achieved in practice BACT determinations:

1. Was the control technology operated in the same manner that would be required by the District if the control technology was required for BACT?
2. How reliable has the control technology been over the life of its use?
3. Has the control technology been verified to perform effectively over the range of operation expected for that type of equipment? Was the effectiveness verified by performance test(s), when possible, or using other performance data?

Other typical considerations that the District considers when making an achieved in practice BACT determination include:

1. Is the control technology commercially available from at least one vendor?
2. On what class and category of source has the control technology been demonstrated?

In summary, the following criteria are used for determining whether a control technology is achieved in practice for wine fermentation:

1. Did the plant using the control technology purchase/lease the equipment? Was that purchase/lease subsidized?
2. Was the control technology operated for at least one fermentation season?
3. Was the control technology operated in the same manner that would be required by the District for BACT purposes?
4. How reliable has the control technology been during its use at the plant?
5. Has the control technology been verified to perform effectively over the range of operation expected for that type of equipment? Was the effectiveness verified by performance test(s), when possible, or other performance data?
6. Is the control technology commercially available from at least one vendor?
7. On what class and category of source has the control technology been demonstrated?

Achieved in Practice Analysis for Known Installations of Wine Fermentation Control Technologies

The following is an analysis of each known installation of an emission control technology to control VOC emissions from wine fermentation tanks and whether that installation can be considered achieved in practice.

Terravant Wine Company (2008 – Current)

Terravant Wine Company submitted an Authority to Construct application for a wine processing facility to the Santa Barbara County Air Pollution Control District (SBCAPCD) on September 20, 2007. The application was deemed complete on October 19, 2007. The fermentation tanks triggered BACT; however, the SBCAPCD evaluation determined BACT to be infeasible. However, this project also triggered offsets and Terravant Wine Company electively proposed to install a packed bed water scrubber with UV/hydrogen peroxide controls to control VOC emissions from the wine fermentation tanks. Proposing the control would reduce VOC emissions to a level below the SBCAPCD offset threshold. The control technology is only required to run sufficiently to reduce emissions to stay below the offset threshold – it is not required to be operated all of the time, as is BACT-required equipment.

The packed bed water scrubber was installed in 2008 and began operation in 2008, with a 95% control efficiency requirement on the Authority to Construct permit. However, in 2008, the unit failed to meet the 95% control efficiency requirement. Prior to the 2009 season, Terravant Wine Company was issued a revised Authority to Construct permit that reduced the control efficiency requirement to 75%. However, the unit has not been able to consistently demonstrate compliance with the 75% control efficiency requirement. The effectiveness of the packed bed scrubber has varied considerably over its life, and has been measured to be as low as 49% control efficiency. During discussions, SBCAPCD staff indicated that this facility has been issued a Notice of Violation for non-compliance with their permitted emission limits and they would not recommend that any wineries use this control technology for the control of fermentation tank emissions, as it has proven to be unreliable. Finally, the control technology used by Terravant Winery is custom designed, and is not a commercially available off-the-shelf type of unit.

The packed bed scrubber technology does not meet the achieved in practice criteria since this control technology has not been operating in compliance with its permit requirements, its effectiveness is highly variable, and the control technology is not commercially available.

EcoPAS, LLC (2009)

EcoPAS conducted testing of their passive alcohol system, which is condensation-based emission control system, at a winery located within the San Luis Obispo County Air Pollution Control District. The purpose of this installation was to conduct full-scale testing of the passive alcohol system on red wine fermentation tanks. The District was unable to verify whether the winery purchased the system.

Since the District could not verify that the winery purchased the control system, this installation doesn't meet the first criteria listed to be considered as achieved in practice. Furthermore, the unit was operated for experimental testing of the control device. In the District's experience, during experimental testing/trial runs, a control technology does not typically operate in the same manner as would be required by BACT, so the District has not historically considered experimental test/trial installations to constitute achieved in practice BACT.

Central Coast Wine Services (2009)

In 2009, Santa Barbara County Air Pollution Control District (SBCAPCD) determined that Central Coast Wine Services (CCWS) was operating without a permit. They required CCWS to submit an application for an Authority to Construct such that the winery would be in compliance with SBCAPCD Rules and Regulations. Based on the emission estimates for the facility, the facility was triggering Best Available Control Technology Requirements and Offsets. At that time, the SBCAPCD determined that BACT, while technologically feasible, was not cost effective. SBCAPCD issued an Authority to Construct/Permit to Operate on June 5, 2009 for the winery.

CCWS was allowed to exceed the offset thresholds during the fall 2009 harvest season in order to test potential control technologies. Three companies were invited to participate in testing of prototype emission control equipment, but only NohBell Corporation elected to install and test fugitive ethanol control equipment.

NohBell Corporation engineered and tested a full scale NoMoVo 1.0 system on a 50 ton tank at the CCWS plant. NoMoVo documents describe the equipment as successful, with full scale trials proceeding. After the 2009 season, NoMoVo documents indicate that CCWS decided to move the plant and equipment.

This installation does not meet the requirements to be considered achieved in practice. First, the facility does not appear to have purchased/leased the control system, nor did they intend to continue operating the system. This is evident by their decision to discontinue use of the system in the following year. Second, no data has been submitted to the District to demonstrate that the unit was continuously operated in the same manner that the District would require the system to operate if it were considered achieved in practice BACT. The purpose of this installation was to perform initial testing and trial runs of the control technology. In the District's experience, during experimental testing/trial runs, a control technology does not typically operate in the same manner as would be required by BACT, so the District has not historically considered experimental test/trial installations to constitute achieved in practice BACT. Furthermore, the type of records necessary to demonstrate continuous operation of the system was not required by the SBCAPCD permit. Finally, the SBCAPCD permit did not include testing requirements to sufficiently demonstrate the effectiveness of the system.

Kendall Jackson Oakville (2010)

Kendall Jackson Winery belongs to Jackson Family Wines Inc (JFW), and is located in Oakville, California. This winery is in Bay Area Air Quality Management District (BAAQMD). BAAQMD does not require permits for wine fermentation or storage operations. Their Regulation 2, Rule 1, 117.9 and 117.10 has exemptions for wine storage and fermentation operations.

In 2010, NohBell installed a NoMoVo 2.0 system at the Kendall Jackson Winery. The system was connected to a 10,000 gallon fermentation tank and operated on a trial basis during the 2010 crush season. Pursuant to Brian Kosi, Winemaker at Kendall-Jackson Oakville, JFW never purchased the NoMoVo technology. The NoMoVo slurry was treated by the facilities on-site wastewater treatment system.

This installation does not meet the requirements of achieved in practice BACT. First, the system was never owned/leased by the winery. Secondly, the unit was operated for the purposes of testing/trial runs to evaluate the control technology. In the District's experience, during experimental testing/trial runs, a control technology does not typically operate in the same manner as would be required by BACT, so the District has not historically considered experimental test/trial installations to constitute achieved in practice BACT. Furthermore, BAAQMD does not have any record of source tests occurring during the 2010 crush season; therefore, the effectiveness for this installation was not established.

Kendall Jackson Oakville (2011-2013)

In its 2010 clean air plan, the BAAQMD included a further study measure (FSM 14 – Winery Fermentation) to examine whether ethanol emissions from Bay Area wine production could be cost-effectively reduced. On 9/26/11, the BAAQMD signed a Research Sponsorship Agreement (Contract No. 2011-126) with NohBell to help develop its technology to capture volatile organic compounds emitted by wine fermentation tanks at Kendall Jackson Oakville. The contract states that *“District (BAAQMD) wishes to support NohBell’s effort to demonstrate the technology at JFW winery and wishes to verify the function and cost-effectiveness of the technology and acquire data to help DISTRICT (BAAQMD) determine whether the equipment could be cost effectively employed more widely in the wine industry”*. NoMoVo submitted a project budget estimate of \$118,750 for its NoMoVo 2.0 upgrades, pump upgrades, and related work at the plant. The BAAQMD contract promised \$50,000 towards this effort, to be paid in installments directly to NohBell Corporation. Furthermore, Brian Kosi of Kendall-Jackson Oakville confirmed that the facility never purchased the NoMoVo system from NohBell and confirmed that the system has been removed from the site by NohBell.

For 2011, NohBell Corporation planned to conduct trials of the upgraded NoMoVo 2.0 system on 10 fermentation tanks. Six to eight trials were anticipated, operating on 4-6 day cycles. The trial runs were scheduled to be primarily conducted while fermenting red wines. The District was unable to obtain operational data for the 2012 and 2013 fermentation seasons for this equipment. Following the 2013 crush season, the equipment was removed and transferred to Constellation Wines in Monterey, CA.

This installation does not pass the first criteria of LAER, since the facility never owned the system and since the installation and operation of the control technology by NohBell was subsidized by a Research Sponsorship Agreement with BAAQMD. Furthermore, operation of the control technology at this facility was for trials/testing of the effectiveness of the control technology. In the District’s experience, during experimental testing/trial runs, a control technology does not typically operate in the same manner as would be required by BACT, so the District has not historically considered experimental test/trial installations to constitute achieved in practice BACT. Finally, the unit was removed, which indicates that this wasn’t intended as a permanent installation. For these reasons, the District does not consider this installation to be achieved in practice.

J. Lohr Vineyard and Winery (2013)

NohBell Corporation has indicated that they operated a NoMoVo system at J. Lohr Winery in Paso Robles during 2013 crush season. The District contacted J. Lohr Winery to obtain more information regarding this installation. J. Lohr Winery personnel stated that they considered this to be a pilot type testing operation. J. Lohr Winery did not purchase or lease the system. The unit operated during the 2013 crush season on fermentation tanks that were processing red wine. After the 2013 crush season, the system was removed and no longer operates at this site. San Luis Obispo Air Pollution Control District (SLOAPCD) had no knowledge that this unit was installed at this winery and no Authority to Construct or permit exemption was issued for this equipment.

This installation does not pass the first criteria of LAER, since the facility never purchased/leased the equipment. Furthermore, operation of the control technology at this facility was for trials/testing of the effectiveness of the control technology at this facility. In the District's experience, during experimental testing/trial runs, a control technology does not typically operate in the same manner as would be required by BACT, so the District has not historically considered experimental test/trial installations to constitute achieved in practice BACT. Finally, the unit was removed, which indicates that this wasn't intended as a permanent installation. For these reasons, the District does not consider this installation to be achieved in practice.

Constellation Winery dba Gonzales Winery (2013)

During the 2013 crush season, a NoMoVo unit was installed on a 39,000 gallon fermentation tank at Constellation Brands U.S. Operations, Inc. dba Gonzales Winery in Monterey, CA. The control technology was installed and operated as a "pilot operation". Monterey Bay Unified Air Pollution Control District (MBUAPCD) compliance staff noticed the NoMoVo unit operating on-site without authorization from MBUAPCD and issued a notice of violation. Gonzales Winery submitted an Authority to Construct application; however, prior to processing that application, the facility notified MBUAPCD that the equipment had been removed from the site. The equipment operated at the site for a partial season for pilot testing purposes. MBUAPCD could not verify whether Gonzales Winery purchased or leased the equipment.

The District was unable to verify whether Gonzales Winery purchased or leased the NoMoVo unit. Furthermore, operation of the control technology at this facility was for trials/testing of the effectiveness of the control technology at this facility. In the District's experience, during experimental testing/trial runs, a control technology does not typically operate in the same manner as would be required by BACT, so the District has not historically considered experimental test/trial installations to constitute achieved in practice BACT. Finally, the unit was removed, which indicates that this wasn't intended as a permanent installation. For these reasons, the District does not consider this installation to be achieved in practice.

Vinwood Cellars Kenwood (2013)

The District has found documents indicating that a NoMoVo system was installed on four 15,000 gallon fermentation tanks at Vinwood Cellars Kenwood in Sonoma county, and the system was operated during the 2013 season. District staff attempted to contact Vinwood Cellars; however, the staff at Vinwood Cellars was unable to verify information for this installation. BAAQMD had no knowledge of this installation, as they do not require permits for wine tanks, so they were unable to verify this installation. Furthermore, since this installation was not subject to permit requirements, BAAQMD has no operational history or test data for this site. While BAAQMD administered source tests at Kendall Jackson Oakville winery, they have no records of any source testing of the NoMoVo system at Vinwood Cellars Kenwood.

This installation has not met the requirements of achieved in practice. First, it has yet to be confirmed that the winery actually purchased the NoMoVo system. Second, BAAQMD has no test records to verify the effectiveness of the NoMoVo system at this site. Finally, the operational history of the unit at this site is not available to determine whether it was operated in the same manner as a unit would be if it were installed as BACT.

Central Coast Wine Services (2013)

On August 5, 2013, CCWS electively applied to install a NoMoVo wine emission capture and control system to control ethanol emissions from fermentation activities at their wine center. The existing fermentation tanks at the facility ranged in capacity from 350 gallons to 20,887 gallons. On September 23, 2013, a final ATC (ATC 14257) was issued for the installation of the NoMoVo system, and the unit began operation in September 27, 2013. The installation of this unit allowed CCWS to increase daily wine fermentation while remaining under their existing daily and annual facility-wide VOC emission limits. A Permit to Operate (PTO 14257) was issued on December 13, 2013.

PTO 14257 states: *"The NoMoVo system is optional and may be used at CCWS' discretion"*. Thus, the permit does not require continuous operation of the NoMoVo system. The NoMoVo system is portable. The system can be attached to four or five fermentation tanks at a time via flexible hoses. The facility is allowed to move the NoMoVo system around, as desired, to capture emissions from the tanks where fermentation is taking place. However, there is no requirement to keep the NoMoVo system attached to a tank and operate it for the full fermentation cycle of that tank. Thus, the District was unable to confirm that the unit was operated in the continuous manner that would be required if the District considered NoMoVo to be achieved in practice BACT.

SBCAPCD PTO 14257 does not include a control efficiency requirement, does not include any source testing requirements to verify the control effectiveness of the control system. The effectiveness of the control has only been estimated using the density change of the NoMoVo slurry to estimate the quantity of ethanol capture, and using a theoretical calculation of the quantity of ethanol that would be emitted if the tanks were uncontrolled. Inlet and outlet air quality testing has not been performed for this particular installation.

Finally, the disposal of the NoMoVo slurry is an important consideration when determining the effectiveness of the control system. If the slurry is disposed of in a manner that re-emits the ethanol into the atmosphere, then the effectiveness of the control is diminished. Until August 2014, the CCWS facility disposed of the NoMoVo slurry in their on-site wastewater treatment facility. On August 21, 2014, SBCAPCD sent a letter to CCWS informing them that they have concerns over the treatment of the NoMoVo slurry. Specifically, SBAPCD was concerned about the potential for stripping of ethanol to the atmosphere during the on-site waste water treatment process. The SBCAPCD letter states *"In conclusion, after August 29, 2014, the District will not recognize emission reductions claimed based on the use of any of your NoMoVo systems (existing or new) at the facility until CCWS has a District-approved on-site or off-site ethanol disposal method in place"*. On August 27th, 2014, SBCAPCD approved the disposal of the NoMoVo slurry at Southern California Waste Water, an off-site facility in Santa Paula, California. In November, 2014, a vacuum truck carrying toxic chemicals from an unrelated facility exploded spreading about 1200 gallons of chemical waste including sulfuric acid and highly combustible organic peroxide. Since that incident, Southern California Waste Water has discontinued the acceptance of waste from all of their clients, so this disposal option is no longer available for the waste generated by CCWS.

The waste is now shipped to a distillery, which distills the ethanol and converts it into vehicle fuel. SBCAPCD has yet to approve the disposal of the NoMoVo slurry to the on-site wastewater facility. Consequently, the overall effectiveness of the system, including any ethanol re-emitted into the atmosphere during disposal, has yet to be sufficiently determined.

Since the control technology has not been demonstrated to operate in a manner that would be required by BACT and the overall effectiveness of the control technology has yet to be sufficiently determined, the District does not consider this installation to be achieved in practice.

Central Coast Wine Services (2014/2015)

In 2014, CCWS submitted an Authority to Construct application for the installation of 40 new tanks, ranging in capacity from 7,407 gallons to 20,628 gallons. The proposal triggered BACT. CCWS decided to forego the normal BACT Analysis, and electively proposed to install six NoMoVo systems to control VOC emissions from the tanks, when the tanks were fermenting wine. A final ATC, (ATC 14350) was issued on July 28, 2014 and the tanks were installed for the 2014 season.

Unlike the previous installations of NoMoVo at this facility, the ATC requires use of the NoMoVo system on these tanks while fermentation is taking place, the permit requires a minimum capture and control efficiency, and the permit requires source testing to verify the effectiveness of the NoMoVo system. However, these tanks have yet to be used for fermentation and the effectiveness has yet to be determined for this installation of the NoMoVo system. An email from Richard Mather of CCWS to David Harris of SBCAPCD, dated September 16, 2014, states:

We won't be using the new tanks for fermentation this year, but since our ATC permit only gives us until August 1, 2015 to fulfill the source test plan, we will need to conduct the test this fall before our last fermentation. It would be highly unlikely that we would be conducting fermentation next year before August 1. Since harvest is progressing rapidly, we probably only have several weeks of fermentation left this year.

Prior to the 2015 season, CCWS received another Authority to Construct for the 40 new tanks that allowed the use of either NoMoVo or EcoPAS control systems. The new Authority to Construct continued to require inlet/outlet testing of the control system. However, that Authority to Construct was later cancelled due to both technology vendors objecting to perform the required source tests to demonstrate the control efficiency of their respective systems. Rather, CCWS was issued a new ATC allowing only 10 of the 40 tanks to be used for fermentation, and limiting

fermentation to white wine only. With those changes to the permits, BACT was no longer triggered and the requirement to demonstrate the actual control efficiency was removed from the permits. Additionally, the use of the NoMoVo or EcoPAS control systems was no longer required; rather, the permit allowed for optional use on the 10 tanks that are allowed to ferment white wine.

The refusal of the control vendors to demonstrate the actual control efficiency raises significant questions and concerns over the vendors' control efficiency claims. The Valley Air District cannot, in good faith, require controls which the vendors refuse to validate. The District's concern is that, if the vendors of this technology are aware that claims of the control efficiency are potentially overstated, but they also know that EPA is about to require their technology to be installed on a widespread basis, they gain no advantage by demonstrating their actual control efficiency. Since the effectiveness was yet again not demonstrated in 2015, and for the reasons stated in the 2013 evaluation of the use of controls at CCWS, the criteria of Achieved in Practice have yet to be satisfied for these installations.

Conclusion

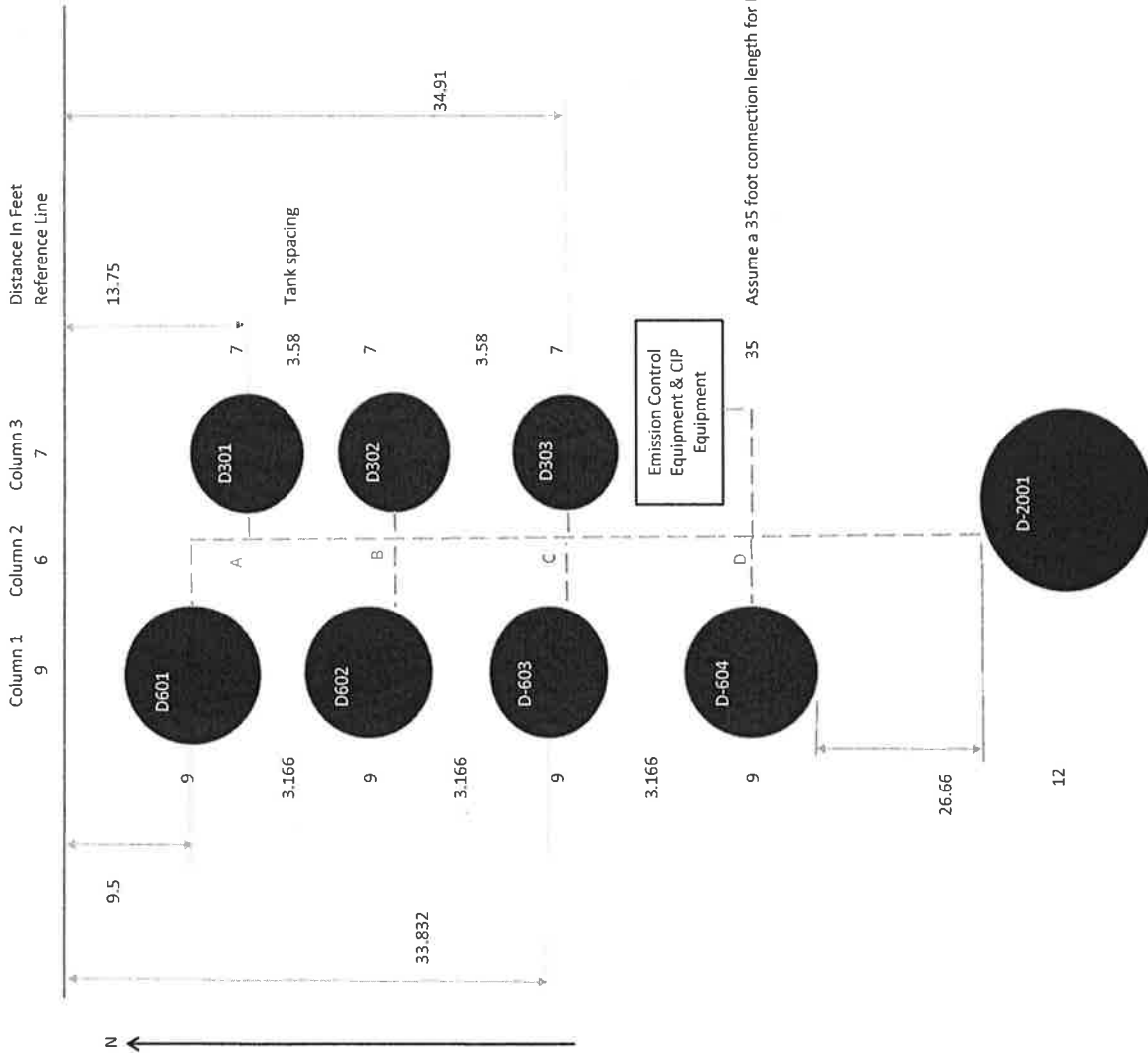
For the reasons listed in the above discussions of each control installation, none of the installations have met all of the criteria necessary for the control technology to be considered as achieved in practice BACT or federal LAER.

Attachment B2

Ducting Layout Diagrams and Ducting Cost Estimates

Alcohol & Fermentation Tanks

--- Main Duct Routing on Process Piping Supports



It is assumed the emission controls and the CIP equipment can be located as shown with alcohol content above 24%. The safety considerations needed for this project can not be determined until a through safety review is completed. For example the electrical classification may be changed from Class I to Class II by moving equipment to a different location than that shown.

It is assumed that due to the alcohol concentration of 24% to 95% that an allowance of \$10,000 is sufficient to take care of these issues, and this cost can be further refined when the surrounding environment for this project is completely reviewed.

The \$10,000 is included in the duct costing file.

Because the tank layout is showing a staggered center lines in the east-west direction the nodes A, B, C and D for the ducting will meet in a cross. This means that the tank connections for the D-600 series tanks will not be located on the center of the tanks. The node is in the center of the D-300's tanks in the east-west direction. The connection on the tank in a north south direction will be on the north south center line of both the D-300's and D-600's tanks.

Since the tanks are about 12 feet tall the ducting is assumed to be at that height, and any height adjustment is made as the ducting enters the emission control equipment and that adjustment is contained in the 35 foot allowance from node D to the emission control equipment.

Tank Size As-Built in Gallons	From	To	Gas Flow CFM	Design Duct Velocity from		Nominal Duct Size diameter in inches	Standard Size of pipe	Total feet	Cost Per Foot from Eichleay	Cost	Comments
				Eichleay Feet/Second	Eichleay						
5,532	D-601	A	28	40		1.47	3.00	11.75	\$31.09	\$365.25	6 inch pipe used and adjusted to 3 inch by using a ratio of the ducting circumferences.
3,371	D-301	A	17	40		1.15	3.00	6.5	\$31.09	\$202.05	3 inch pipe is the smallest selected to maintain structural rigidity All ducting is run at the tank height for all tanks.
3,371	A	B	46	40		1.87	3.00	10.58	\$31.09	\$328.88	
5,532	D-302	B	17	40		1.15	3.00	6.5	\$31.09	\$202.05	
	D-602	B	28	40		1.47	3.00	7.5	\$31.09	\$233.14	
	B	C	91	40		2.64	3.00	10.58	\$31.09	\$328.88	
5,532	D-603	C	28	40		1.47	3.00	7.5	\$31.09	\$233.14	
3,371	D-303	C	17	40		1.15	3.00	6.5	\$31.09	\$202.05	
	C	D	137	40		3.23	6.00	11.09	\$62.17	\$689.34	
5,532	D-604	D	28	40		1.47	3.00	7.5	\$31.09	\$233.14	
19,900	D-2001	D	102	40		2.79	3.00	36.082	\$31.09	\$1,121.61	
	D	Emission controls	267	40		4.52	6.00	35	\$62.17	\$2,175.95	

Eichleay's value for a knock out drum was \$46,300. Because these tanks are small the drum is envisioned to be about a 1000 gallons. A budget of \$5,000 is used. The ducting is priced on 6 inch which is the smallest we have pricing for. A 3 inch would be acceptable. As a result the ducting pipe size is reduced by 50%. We have reduced the duct spools and connection valve by the same amount. The 50% was chosen based on the ratio of the surface area of a 3 inch duct to a 6 inch duct. This reduces the amount of material and the linear length of weld to be run by about 50%.

The system is to be used for red fermentation so the fermentation gas flows were used for the duct sizing.

Duct	
Redundant Duct for Cleaning	\$6,315
Knock Out Drum	\$0
Allowance for Safety Issues	\$5,000
Small Size Disconnect Spool	\$0
Small Size Valves and Fittings	\$8,500
	\$2,000
	\$21,820

1) One of the major concerns of a manifold duct system is inadvertently transferring fluids from one tank to another.

2) For this reason it is necessary to design into the system a positive disconnect of the ducting system when the tanks is not being filled on a fermentation is under way. There are a number of ways this can be done, but for illustration purposes we took a very brief look at a automatic butterfly valve with a physical spool to disconnect the tank from the duct.

3) It should be pointed out that no design work has been done, and this should be considered a conceptual estimate.

Attachment B3

Comparison of Stainless Steel Ducting Costs

Ducting/Piping Cost Comparison

Duct Size Diameter (in.)	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	28"
Eichleay - Ducting/Piping Only \$/Foot	--	--	--	\$23.17	\$38.59	\$54.00	\$62.00	\$65.50	\$69.00	\$86.00	\$92.00	\$99.00	\$106.00	\$119.00
Eichleay - Ducting/Piping Only \$/Foot Including 21.93% for Inflation	--	--	--	\$28.25	\$47.05	\$65.84	\$75.60	\$79.86	\$84.13	\$104.86	\$112.18	\$120.71	\$129.25	\$145.10
Average \$/Foot from District Cost Survey	\$15.49	\$30.85	\$27.67	\$44.13	\$37.50	\$33.13	\$93.75	\$181.70	\$216.50	\$189.02	\$308.40	--	\$193.99	--
Average \$/Foot from District Cost Survey from Suppliers of Both 3" and 6"	--	\$30.85	--	\$57.26	--	--	--	--	--	--	--	--	--	--

Ducting/Piping Costs based on Eichleay Report

Note: Minimum of 6" Diameter for Structural Support														
Duct Size Diameter (in.)	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	28"
Ducting/Piping Only \$/Foot	--	--	--	\$23.17	\$38.59	\$54.00	\$62.00	\$65.50	\$69.00	\$86.00	\$92.00	\$99.00	\$106.00	\$119.00
Ducting + Fittings, Bolt Up, Handling, & Install \$/Foot	--	--	--	\$62.17	\$103.25	\$144.33	\$143.83	\$174.17	\$204.52	\$251.38	\$309.38	\$306.44	\$397.67	\$476.73
Ducting + Fittings, Bolt Up, Handling, & Install \$/Foot	--	--	--	\$62.17	\$103.25	\$144.33	\$143.83	\$174.17	\$204.52	\$251.38	\$309.38	\$306.44	\$397.67	\$476.73

Supplier: Grainger (<http://www.grainger.com>)

Location: Fresno, CA and Ceres, CA														
Schedule 10														
Duct Size Diameter (in.)	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	
Price (\$)	\$229.50	\$387.75	\$587.50	--	--	--	--	--	--	--	--	--	--	--
Length (feet)	10	10	10	--	--	--	--	--	--	--	--	--	--	--
Price/Foot (\$)	\$22.95	\$38.78	\$58.75	--	--	--	--	--	--	--	--	--	--	--

Supplier: Stockton Pipe and Supply Inc (<http://www.stocktonpipe.net>)

Location: Stockton, CA														
Note: Sizes over 12" Diameter need to be ordered from Mill														
0.109" thickness tube or Schedule 10 Pipe														
Duct Size Diameter (in.)	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	
Price (\$)	--	--	--	--	--	\$700.00	\$840.00	--	--	--	--	--	\$3,159.60	
Length (feet)	--	--	--	--	--	20	20	--	--	--	--	--	20	
Price/Foot (\$)	--	--	--	--	--	\$35.00	\$42.00	--	--	--	--	--	\$157.98	

Supplier: Valley Iron Inc (<http://www.stocktonpipe.net>)

Location: Fresno, CA														
Note: Sch 10 T-304 20'														
Schedule 10 Pipe														
Duct Size Diameter (in.)	2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	
Length (feet)	--	--	20	20	20	20	--	--	--	--	--	--	--	
Price/Foot (\$)	--	--	\$10.75	\$16.90	\$26.00	\$33.90	--	--	--	--	--	--	--	

Appendix C

**BACT Guideline 5.4.13 Top Down VOC BACT Analysis for
Wine Storage Tanks**

Top Down BACT Analysis for VOCs from Wine Storage Operations

Step 1 - Identify All Possible Control Technologies

SJVUAPCD BACT Clearinghouse guideline 5.4.13 identifies achieved in practice BACT for wine storage tanks as follows:

- 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.

SJVUAPCD BACT Clearinghouse guideline 5.4.13 identifies technologically feasible BACT for wine storage tanks as follows:

- 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)

***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 to diurnal temperature variations. Tanks made entirely of non-conducting materials such as concrete and wood (except for fittings) are considered self-insulating.*

SJVUAPCD BACT Clearinghouse guideline 5.4.13 does not identify any alternate basic equipment control alternatives.

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Rank by Control Effectiveness		
Rank	Control	Overall Capture and Control Efficiency
1	Capture of VOCs and thermal oxidation or equivalent	98%*
2	Capture of VOCs and carbon adsorption or equivalent	95%
3	Capture of VOCs and absorption (scrubber) or equivalent	90%
4	Capture of VOCs and condensation or equivalent	70%
5	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	Baseline (Achieved-in-Practice)

* Following recent District practice, thermal and catalytic oxidation will be ranked together.

Step 4 - Cost Effectiveness Analysis

A cost effective analysis must be performed for all control options that have not been determined to be achieved in practice in the list from Step 3 above, in the order of their ranking, to determine the cost effective option with the lowest emissions.

District BACT Policy APR 1305 establishes annual cost thresholds for imposed control based upon the amount of pollutants reduced by the controls. If the cost of control is at or below the threshold, it is considered a cost effective control. If the cost exceeds the threshold, it is not cost effective and the control is not required. Per District BACT Policy, the maximum cost limit for VOC reduction is \$17,500 per ton of VOC emissions reduced.

BACT Analysis Assumptions – All Control Options

- It is expected that if control systems were required to be installed on a wine storage *and* fermentation tank, that a winery would install a system capable of controlling the worst case (highest) emissions which are fermentation emissions. Therefore the ductwork, clean-in-place systems and all control systems would need to be adequately sized to control the fermentation emissions. As such, the size, cost and number of control devices necessary to control storage emissions will be the same as was determined in the fermentation top down BACT analysis in Appendix C.
- As stated above, all the cost from the fermentation analysis in Appendix C apply to this top down BACT analysis except for the annual labor, utility and maintenance costs. Fermentation is expected to only operate for 90 days out of the year whereas storage operations can occur all year round; therefore, the annual labor and maintenance will be recalculated in this Appendix accordingly.
- In determining the labor costs for the cost analyses, two shifts are assumed to be appropriate for a control system serving wine storage tanks.
- Sales Tax: This facility is located in Livingston, CA, which has a current sales tax rate of 7.25%. However, pollution control equipment qualifies for a partial tax exemption in California. According to the following link, the tax exemption rate is 4.1875%, http://www.boe.ca.gov/sutax/manufacturing_exemptions.htm#Purchasers. Therefore, the sales tax rate used in this analysis will be set equal to 3.06% (7.25% - 4.1875%).
- Due to the unsteady state operation of storage tanks, initial source testing is expected to be a significant technical operation with significant expense, conducted over the filling cycle rather than the typical three 30-minute steady state measurements. An additional cost of \$15,000 per control unit will be assumed for initial source testing.
- Annual source testing will also be required. An annual charge of \$15,000 will be included.
- Project Contingency: For detailed estimates, the Association for the Advancement of Cost Engineering International recommends a contingency factor of 15%, while the Electric Power Research Institute recommends a contingency of 10% to 20% (<ftp://ftp.repec.org/opt/ReDIF/RePEc/sip/04-005.pdf>). Therefore, a cost contingency of 15% will be applied to the detailed estimates provided in these cost analyses. Additionally, since both the direct and indirect costs are detailed estimates and both of these categories of costs have uncertainty associated with them; the contingency will be applied to both the direct and indirect costs.

- The cost of project management, internal engineering operations planning required to implement a new control technology in a commercial winery will be included in each cost analysis as the owner's cost. In District project-1133347, an owners cost of \$100,000 was assumed for an installation of 12 wine fermentations/storage tanks with a combined total capacity of 4,200,000 million gallons. This current project has a combined total capacity of 54,500 gallons. The owners cost will be conservatively assumed to have a linear relationship with the total capacity of the tanks being installed. An owner's cost of \$1,298 ($\$100,000 \times 54,500 \text{ gallons} \div 4,200,000 \text{ gallons}$) will be used for the following cost analyses.
- In order to capture fermentation emissions from wine fermentation tanks, it is necessary to enclose the tanks and duct the captured vapors to the control device. An increase in back pressure can result from enclosing the control device and adding the duct work and control system. Increases in back pressure to the tanks causes additional CO₂ absorption into the wine, resulting in the possibility of an effervescent reaction and a foam-over event. To proactively prevent catastrophic events like foam overs, it is necessary to monitor back pressure and temperature of the tanks and take immediate action if the back pressure rises to critical levels that suggest a foam over is about to occur. The cost of the equipment to monitor the pressure and temperature and integrate the data into the winery's existing system is included in the Programming Controller Logic (PCL) cost. In District Project C-1133347, a PCL cost of \$10,000 per control system was provided to the District. This cost will be used to estimate PCL costs for the currently proposed project.
- In addition to the ducting costs calculated, the facility proposed to also include "piping" costs for each control option as allowed by EPA's Control Cost Manual, Sixth Edition (EPA/452/B-02-001); however, it can reasonably be assumed that the "piping" costs are already accounted for in the ducting costs. Therefore, the District will not include "piping" cost for each control option.

Uncontrolled Storage Emissions

E & J Gallo Winery is proposing to establish a combined VOC emission limit for all fermentation and storage operations of the 8 winery tanks being modified within this project. Other than the combined VOC emission limit from these tanks, there will be no specific condition limiting the amount of wine storage that can take place in these 8 storage tanks. Therefore, for the purposes of this cost effectiveness analysis, uncontrolled storage VOC emissions will be set equal to the total VOC emissions allowed under the new combined limit.

Uncontrolled Storage PE= 7,486 lb-VOC/year

Collection System Capital Investment (based on ductwork and clean-in-place system)

A common feature of all technically feasible options is that they require installation of a collection system for delivering the VOCs from the tanks to the common control device(s). Therefore, the following collection system analysis and cost estimate will be used in the cost effectiveness analysis for each control option.

Basis of Cost Information:

- The costs for the ductwork and the required clean-in-place (CIP) system are based on information from the 2005 Eichleay Study. The 2005 Eichleay study was used in development of District Rule

4694 Wine Fermentation and Storage Tanks and includes substantial information on the costs and details of the potential application of VOC controls to wineries and addresses many of the technical issues of the general site specific factors for wineries.

- The collection system consists of stainless steel place ductwork (stainless steel is required due to food grade product status) with isolation valving, connecting the 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 be included in the cost estimate.
- The District performed a cost survey of stainless steel ducting/piping and found that the values stated in the Eichleay report including the cost of inflation (applied as stated below) were cheaper; therefore, as a conservative estimate, the District will use the cost of ducting/piping from the Eichleay report which will include ducting, fittings, bolt up, handle, and install. A summary of the survey is included in Attachment C3.
- Eichleay's cost estimate for ducting included the duct, fittings, bolt up, handle and install. When additional costs, as allowed for in the EPA Control Cost Manual, were added onto the ducting cost estimate, the facility double counted some of the costs that Eichleay already accounted for in their estimate; therefore, the District did not allow the additional costs for foundations & supports, handling & erection, electrical, piping or painting.
- One of the major concerns of a manifold duct system is microorganisms spoiling the product, and transferring from one tank to another. It is necessary to design into the system a positive disconnect of the ducting system when the tanks are not being filled. There are a number of ways this can be done. In this case, an automatic butterfly valve with a physical spool to disconnect the tank from the duct will be utilized.
- An inflation amount of 22.89% for the period of 2005 to 2016 taken from United States Department of Labor Bureau of Labor Statistics' CIP Inflation Calculator will be used:
http://www.bls.gov/data/inflation_calculator.htm.

Capital Cost of Ductwork

As detailed in the tank layout sketches and the ductwork cost calculations included in Attachment B2, the cost is summarized below:

Duct = \$6,315

Small size valves and fittings = \$2,125/valve x 8 valves x 0.5 system⁴ = \$8,500

Unit installed cost for small size disconnect spool = \$500/tank x 8 tanks x 0.5 system = \$2,000

1 Knockout drum = \$5,000

Total = \$6,315 + \$8,500 + \$2,000 + \$5,000
= **\$21,820**

Annualized Capital Investment of Ductwork and Clean-In-Place (CIP) System

The annualized capital cost for the ductwork and CIP system serving the tank groups was established in Appendix C above. The annualized capital cost will be as follows:

⁴ Since the system will comprise of 3" pipe instead of the normal 6" pipe for other projects, the valves, fittings and disconnect spool will be discounted by 50%.

Annualized Capital Investment = \$76,054/year

Option 1 - Collection of VOCs and Control by Thermal or Catalytic Oxidation (98% collection & control):

Design Basis

- Due to the additional flow rate from the storage tanks being minimal compared to the flow rate of the fermentation tanks, all of the wine storage tanks have already been included and analyzed in the control equipment associated with the fermentation tanks in Appendix C above.

Thermal/Catalytic Oxidizer Capital Cost

The annualized capital cost for thermal/catalytic oxidizers serving each of the tank groups was established in Appendix C above. The annualized capital cost will be as follows:

Annualized Capital Investment = \$25,223/year

Annual Operation and Maintenance Costs

Fuel and Electricity Costs

As discussed above, the control systems for these storage tanks is being designed for the worst case emission scenario which occurs during fermentation operations. When these tanks are being used for wine storage, the emissions and airflow rates will be considerably lower than when fermentation operations are taking place. Therefore, the blowers and thermal oxidizer that make up the control system will not be utilized at their maximum capacities. Due to the lower utilization rates, as a conservative estimate, it will be assumed that no auxiliary natural gas and electricity will be needed to operate the thermal oxidizer. Therefore, the auxiliary costs for natural gas and electricity consumption will be set equal to \$0 for the purposes of this top-down BACT analysis.

Total Operating and Maintenance Costs

Annual Costs (Based on: EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.2: VOC Destruction Controls, Chapter 2: Incinerators (September 2000), Table 2.10 - Annual Costs for Thermal and Catalytic Incinerators Example Problem. United States Environmental Protection Agency Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina 27711. EPA/452/B-02-001)⁹.

Thermal/Catalytic Oxidizer Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	$\$18.50/\text{hr} \times 0.5 \text{ hr/shift} \times 2 \text{ shift/day} \times 365 \text{ days/year} \times 1 \text{ unit}$	\$6,753
Supervisor	15% of operator		\$1,013
Maintenance			
Labor	0.5 h/shift	$\$18.50/\text{hr} \times 0.5 \text{ hr/shift} \times 2 \text{ shift/day} \times 365 \text{ days/year} \times 1 \text{ unit}$	\$6,753
Maintenance	100% of labor		\$6,753
Utility			
Natural Gas	not included		\$0
Electricity	not included		\$0
Total DAC			\$21,272
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	$0.6 \times (\$6,753 + \$1,013 + \$6,753 + \$6,753)$	\$12,763
Administrative	2% of TCI (taken from Appendix C above)		\$3,096
Property Taxes	1% of TCI (taken from Appendix C above)		\$1,548
Insurance	1% of TCI (taken from Appendix C above)		\$1,548
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$33,955
Annual Operating Cost (DAC + IAC)			\$55,227

Total Annual Cost

$$\begin{aligned}\text{Total Annual Cost} &= \text{Regenerative Thermal Oxidizer System} + \text{Annual Cost} + \text{Ductwork/CIP Cost} \\ &= \$25,223 + \$55,227 + \$76,054 \\ &= \$156,504\end{aligned}$$

⁹ <http://epa.gov/ttn/catc/dir1/cs3-2ch2.pdf>

Emission Reductions

$$\begin{aligned}\text{Annual Emission Reduction} &= \text{Uncontrolled Storage Emissions} \times 0.98 \\ &= 7,486 \text{ lb-VOC/year} \times 0.98 \\ &= 7,336 \text{ lb-VOC/year} \\ &= 3.7 \text{ tons-VOC/year}\end{aligned}$$

Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} \div \text{Annual Emission Reductions}$$

$$\begin{aligned}\text{Cost Effectiveness} &= \$156,504/\text{year} \div 3.7 \text{ tons-VOC/year} \\ &= \$42,298/\text{ton-VOC}\end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the regenerative thermal oxidizer system, collection system ductwork and CIP equipment, and annual costs results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 2 - Collection of VOCs and control by carbon adsorption (95% collection and control):

Design Basis

- Due to the additional flow rate from the storage tanks being minimal compared to the flow rate of the fermentation tanks, all of the wine storage tanks have already been included and analyzed in the control equipment associated with the fermentation tanks in Appendix C above.
- Additional costs which were conservatively not evaluated in the cost analysis below include but are not limited to:
 - The cost for a tank to collect the condensed ethanol laden steam from regeneration of the carbon bed.
 - Annual steam costs required to regenerate the carbon beds.
 - Annual cooling water costs required to condense the ethanol laden steam from regeneration of the carbon beds and the condenser equipment.
 - Electricity costs of system fans, bed drying/cooling fans and cooling water pumps.
- Ethanol laden water is a byproduct produced when the carbon is regenerated with steam and the ethanol laden steam is condensed. The collected ethanol laden water will need to be disposed of and can be a significant cost; however, conservatively, the costs will not be included at this time.

Carbon Adsorption Capital Cost

The annualized capital cost for carbon adsorption equipment including the carbon serving each of the tank groups was established in Appendix C above. The annualized capital cost will be as follows:

$$\text{Annualized Capital Investment} = \$27,997/\text{year}$$

Total Operation and Maintenance Costs

The annual operation and maintenance costs for the carbon adsorption system are based on the information given in the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.1: VOC Recapture Controls, Chapter 1: Carbon Adsorbers (September 1999)¹². No value will be given for the ethanol that may be potentially recovered since this ethanol could actually result in additional disposal costs, which will also not be quantified in this analysis.

Carbon Adsorption Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	$\$18.50/\text{hr} \times 0.5 \text{ hr/shift} \times 2 \text{ shift/day} \times 365 \text{ days/year} \times 1 \text{ unit}$	\$6,753
Supervisor	15% of operator		\$1,013
Maintenance			
Labor	0.5 h/shift	$\$18.50/\text{hr} \times 0.5 \text{ hr/shift} \times 2 \text{ shift/day} \times 365 \text{ days/year} \times 1 \text{ unit}$	\$6,753
Maintenance	100% of labor		\$6,753
Utility			
Natural Gas from Steam Production (not included)			-
Electricity (not included)			-
Total DAC			\$21,272
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	$0.6 \times (\$6,753 + \$1,013 + \$6,753 + \$6,753)$	\$12,763
Administrative	2% of TCI (taken from Appendix C above)		\$2,023
Property Taxes	1% of TCI (taken from Appendix C above)		\$1,012
Insurance	1% of TCI (taken from Appendix C above)		\$1,012
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$31,810
Annual Cost (DAC + IAC)			\$53,082

Total Annual Cost for Carbon Adsorption

Total Annual Cost = Carbon Adsorption Capital Cost + Annual Operating Cost + Ductwork/CIP Cost
= \$27,997 + \$53,082 + \$76,054
= \$157,133

Emission Reductions

$$\begin{aligned}\text{Annual Emission Reduction} &= \text{Uncontrolled Storage Emissions} \times 0.95 \\ &= 7,486 \text{ lb-VOC/year} \times 0.95 \\ &= 7,112 \text{ lb-VOC/year} \\ &= 3.6 \text{ tons-VOC/year}\end{aligned}$$

Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} \div \text{Annual Emission Reductions}$$

$$\begin{aligned}\text{Cost Effectiveness} &= \$157,133/\text{year} \div 3.6 \text{ tons-VOC/year} \\ &= \$43,648/\text{ton-VOC}\end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the carbon adsorption system and collection system ductwork and CIP equipment results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 3 - Collection of VOCs and Control by Absorption/Scrubber (90% collection & control):

Design Basis

- Due to the additional flow rate from the storage tanks being minimal compared to the flow rate of the fermentation tanks, all of the wine storage tanks have already been included and analyzed in the control equipment associated with the fermentation tanks in Appendix C above.
- Recovered ethanol storage tank = \$40,000 (installed, as proposed in Project C-1133347)
- Connected electrical load for each unit is 2.5 horsepower which is assumed to operate continuously for 16 hours per day and 365 days.
- Electric power cost = \$0.1573/kWh (see regenerative thermal oxidizer Top Down BACT Analysis section above)
- Captured ethanol is recovered as a 10% solution suitable for disposal to an ethanol distillery at a cost of \$0.08 per gallon per NohBell
- Since the EPA Control Cost Manual does not contain a section for wet scrubbers controlling VOCs, conservatively, the costs in addition to the base equipment costs will be estimated from the Wet Scrubbers for Particulate Matter control from the EPA Control Cost Manual.

Scrubber Capital Equipment Cost

The annualized capital cost for scrubbers serving the tanks in fermentation and storage service was established in Appendix C above. The annualized capital cost is as follows:

$$\text{Annualized Capital Investment} = \$34,647/\text{year}$$

Wastewater Disposal Costs

Additionally, the water scrubber will generate ethanol-laden wastewater containing 6,064 lbs-ethanol annually (7,486 lb/year (uncontrolled fermentation emissions) x 0.81). Assuming a 10% solution, approximately 9,160 gallons of waste water (6,064 lbs-ethanol x gal/6.62 lb ÷ 0.10) will be generated annually. An allowance of \$0.08 per gallon is applied for disposal costs.

Annual disposal costs = 9,160 gallons x \$0.08/gallon = \$733

Total Operation and Maintenance Costs

Scrubber Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Supervisor	15% of operator		\$1,013
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Maintenance	100% of labor		\$6,753
Wastewater Disposal			
	10% Solution = 9,160 gal	\$0.08/gal	\$733
Utility			
Electricity	1 unit x 2.5 hp x 0.746 kW/hp x 16 hr/day x 365 day/yr = 10,892 kWh/yr	\$0.1573/kWh	\$1,713
Total DAC			\$23,718
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$6,753 + \$1,013 + \$6,753 + \$6,753)	\$12,763
Administrative	2% of TCI (taken from Appendix C above)		\$4,252
Property Taxes	1% of TCI (taken from Appendix C above)		\$2,126
Insurance	1% of TCI (taken from Appendix C above)		\$2,126
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$36,267
Annual Cost (DAC + IAC)			\$59,985

Total Annual Cost = Scrubber Capital Cost + Annual Operating Cost + Ductwork/CIP Cost
 = \$34,647 + \$59,985 + \$76,054
 = \$170,686

Emission Reductions

The District's BACT Guideline identifies an overall collection and control efficiency of 90% for absorption systems.

$$\begin{aligned}\text{Annual Emission Reduction} &= \text{Uncontrolled Storage Emissions} \times 0.90 \\ &= 7,486 \text{ lb-VOC/year} \times 0.90 \\ &= 6,737 \text{ lb-VOC/year} \\ &= 3.4 \text{ tons-VOC/year}\end{aligned}$$

Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} \div \text{Annual Emission Reductions}$$

$$\begin{aligned}\text{Cost Effectiveness} &= \$170,686/\text{year} \div 3.4 \text{ tons-VOC/year} \\ &= \$50,202/\text{ton-VOC}\end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the scrubber and annual costs results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 4 - Capture of VOCs and Condensation (70% collection & control):

Design Basis

- Due to the additional flow rate from the storage tanks being minimal compared to the flow rate of the fermentation tanks, all of the wine storage tanks have already been included and analyzed in the control equipment associated with the fermentation tanks in Appendix C above.
- Additional costs which were conservatively not evaluated in the cost analysis below include but are not limited to:
 - Glycol chiller system.
- This control technology recovers ethanol which potentially requires additional cost to dispose of. The District currently knows of two winery facilities that recover ethanol: Central Coast Wine Services and Terravant Winery, both located within the Santa Barbara County. Information from the Santa Barbara County APCD indicates that neither facility generates any revenue from the recovered ethanol. Central Coast Wine Services sends their recovered ethanol to a facility in San Luis Obispo that refines the recovered ethanol into motor vehicle fuels and Terravant Winery utilizes a UV system to destroy the ethanol. Although EcoPAS claims that there is value in the recovered ethanol in a future market that may be developed, the District will conservatively assume that there is no cost required to dispose/treat the recovered ethanol nor is there a value in the recovered ethanol.

Equipment Cost Refrigerated Condenser

The annualized capital cost for condensation systems serving the tank groups in fermentation and storage service were previously established in Appendix C above. The annualized capital cost is as follows:

Annualized Capital Investment = \$44,255/year

Total Operation and Maintenance Costs

Condensation Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Supervisor	15% of operator		\$1,013
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Maintenance	100% of labor		\$6,753
Chiller (Glycol)			
Not included at this time			-
Utility (Electricity)			
Not included at this time			-
Total DAC			\$21,272
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$6,753 + \$1,013 + \$6,753 + \$6,753)	\$12,763
Administrative	2% of TCI (taken from Appendix C above)		\$5,430
Property Taxes	1% of TCI (taken from Appendix C above)		\$2,715
Insurance	1% of TCI (taken from Appendix C above)		\$2,715
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$38,623
Annual Cost (DAC + IAC)			\$59,895

Total Annual Cost = Condenser Capital Cost + Annual Operating Cost + Ductwork/CIP Cost
= \$44,255 + \$59,895 + \$76,054
= \$180,204

Emission Reductions

The District's BACT Guideline identifies an overall collection and control efficiency of 70% for absorption systems.

$$\begin{aligned}
 \text{Annual Emission Reduction} &= \text{Uncontrolled Fermentation Emissions} \times 0.70 \\
 &= 7,486 \text{ lb-VOC/year} \times 0.70 \\
 &= 5,240 \text{ lb-VOC/year} \\
 &= 2.6 \text{ tons-VOC/year}
 \end{aligned}$$

Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} \div \text{Annual Emission Reductions}$$

$$\begin{aligned}
 \text{Cost Effectiveness} &= \$180,204/\text{year} \div 2.6 \text{ tons-VOC/year} \\
 &= \$69,309/\text{ton-VOC}
 \end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the refrigerated condenser system and annual costs results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 5 - Insulation, PVRV, "Gas-Tight" Tank Operation, and Storage Temperature not Exceeding 75 deg F, Achieved within 60 days of Completion of Fermentation:

The only remaining control option in step 3 above has been deemed AIP for this class and category of source and per the District BACT policy is required regardless of the cost. Therefore, a cost effectiveness analysis is not required.

Step 5 – Select BACT

All identified feasible options with control efficiencies higher than the option proposed by the facility have been shown to not be cost effective. Each of these wine storage tanks is already equipped and/or operated in a manner that complies with Option 5, insulated tank, pressure/vacuum valve set within 10% of the maximum allowable working pressure of the tank, "gas tight" tank operation and achieve and maintain a continuous storage temperature not exceeding 75°F within 60 days of completion of fermentation. These BACT requirements will be placed on the ATCs as enforceable conditions.

Appendix D

**BACT Guideline 5.4.15 Top Down VOC BACT Analysis for
Distilled Spirits Storage Tanks**

Top Down BACT Analysis for VOCs from Distilled Spirits Storage Operations

Step 1 - Identify All Possible Control Technologies

SJVUAPCD BACT Clearinghouse guideline 5.4.15 identifies achieved in practice BACT for distilled spirits storage tanks as follows:

- 6) Insulation or Equivalent**, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank and "gas-tight" tank operation.

SJVUAPCD BACT Clearinghouse guideline 5.4.15 identifies technologically feasible BACT for distilled spirits storage tanks as follows:

- 7) Capture of VOCs and thermal or catalytic oxidation or equivalent (98% control)
- 8) Capture of VOCs and carbon adsorption or equivalent (95% control)
- 9) Capture of VOCs and absorption or equivalent (90% control)
- 10) 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 to diurnal temperature variations. Tanks made entirely of non-conducting materials such as concrete and wood (except for fittings) are considered self-insulating.*

SJVUAPCD BACT Clearinghouse guideline 5.4.15 does not identify any alternate basic equipment control alternatives.

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Rank by Control Effectiveness		
Rank	Control	Overall Capture and Control Efficiency
1	Capture of VOCs and thermal oxidation or equivalent	98%*
2	Capture of VOCs and carbon adsorption or equivalent	95%
3	Capture of VOCs and absorption (scrubber) or equivalent	90%
4	Capture of VOCs and condensation or equivalent	70%
5	Insulation or Equivalent, Pressure Vacuum Relief Valve (PVRV) set within 10% of the maximum allowable working pressure of the tank and "gas-tight" tank operation	Baseline (Achieved-in-Practice)

* Following recent District practice, thermal and catalytic oxidation will be ranked together.

Step 4 - Cost Effectiveness Analysis

A cost effective analysis must be performed for all control options that have not been determined to be achieved in practice in the list from Step 3 above, in the order of their ranking, to determine the cost effective option with the lowest emissions.

District BACT Policy APR 1305 establishes annual cost thresholds for imposed control based upon the amount of pollutants reduced by the controls. If the cost of control is at or below the threshold, it is considered a cost effective control. If the cost exceeds the threshold, it is not cost effective and the control is not required. Per District BACT Policy, the maximum cost limit for VOC reduction is \$17,500 per ton of VOC emissions reduced.

BACT Analysis Assumptions – All Control Options

- It is expected that if control systems were required to be installed on a distilled spirits storage *and* fermentation tank, that a winery would install a system capable of controlling the worst case (highest) emissions which are fermentation emissions. Therefore the ductwork, clean-in-place systems and all control systems would need to be adequately sized to control the fermentation emissions. As such, the size, cost and number of control devices necessary to control storage emissions will be the same as was determined in the fermentation top down BACT analysis in Appendix C.
- As stated above, all the cost from the fermentation analysis in Appendix C apply to this top down BACT analysis except for the annual labor, utility and maintenance costs. Fermentation is expected to only operate for 90 days out of the year whereas storage operations can occur all year round; therefore, the annual labor and maintenance will be recalculated in this Appendix accordingly.
- In determining the labor costs for the cost analyses, two shifts are assumed to be appropriate for a control system serving storage tanks.
- Sales Tax: This facility is located in Livingston, CA, which has a current sales tax rate of 7.25%. However, pollution control equipment qualifies for a partial tax exemption in California. According to the following link, the tax exemption rate is 4.1875%, http://www.boe.ca.gov/sutax/manufacturing_exemptions.htm#Purchasers. Therefore, the sales tax rate used in this analysis will be set equal to 3.06% (7.25% - 4.1875%).
- Due to the unsteady state operation of storage tanks, initial source testing is expected to be a significant technical operation with significant expense, conducted over the filling cycle rather than the typical three 30-minute steady state measurements. An additional cost of \$15,000 per control unit will be assumed for initial source testing.
- Annual source testing will also be required. An annual charge of \$15,000 will be included.
- Project Contingency: For detailed estimates, the Association for the Advancement of Cost Engineering International recommends a contingency factor of 15%, while the Electric Power Research Institute recommends a contingency of 10% to 20% (<ftp://ftp.repec.org/opt/ReDIF/RePEc/sip/04-005.pdf>). Therefore, a cost contingency of 15% will be applied to the detailed estimates provided in these cost analyses. Additionally, since both the direct and indirect costs are detailed estimates and both of these categories of costs have uncertainty associated with them; the contingency will be applied to both the direct and indirect costs.
- The cost of project management, internal engineering operations planning required to implement a new control technology in a commercial winery will be included in each cost analysis as the owner's cost. In District project-1133347, an owners cost of \$100,000 was assumed for an installation of 12 wine fermentations/storage tanks with a combined total capacity of 4,200,000 million gallons. This

current project has a combined total capacity of 54,500 gallons. The owners cost will be conservatively assumed to have a linear relationship with the total capacity of the tanks being installed. An owner's cost of \$1,298 ($\$100,000 \times 54,500 \text{ gallons} \div 4,200,000 \text{ gallons}$) will be used for the following cost analyses.

- In order to capture fermentation emissions from wine fermentation tanks, it is necessary to enclose the tanks and duct the captured vapors to the control device. An increase in back pressure can result from enclosing the control device and adding the duct work and control system. Increases in back pressure to the tanks causes additional CO₂ absorption into the wine, resulting in the possibility of an effervescent reaction and a foam-over event. To proactively prevent catastrophic events like foam overs, it is necessary to monitor back pressure and temperature of the tanks and take immediate action if the back pressure rises to critical levels that suggest a foam over is about to occur. The cost of the equipment to monitor the pressure and temperature and integrate the data into the winery's existing system is included in the Programming Controller Logic (PCL) cost. In District Project C-1133347, a PCL cost of \$10,000 per control system was provided to the District. This cost will be used to estimate PCL costs for the currently proposed project.
- In addition to the ducting costs calculated, the facility proposed to also include "piping" costs for each control option as allowed by EPA's Control Cost Manual, Sixth Edition (EPA/452/B-02-001); however, it can reasonably be assumed that the "piping" costs are already accounted for in the ducting costs. Therefore, the District will not include "piping" cost for each control option.

Uncontrolled Storage Emissions

E & J Gallo Winery is proposing to establish a combined VOC emission limit for all fermentation and storage operations of the 8 winery tanks being modified within this project. Other than the combined VOC emission limit from these tanks, there will be no specific condition limiting the amount of distilled spirits storage that can take place in these 8 storage tanks. Therefore, for the purposes of this cost effectiveness analysis, uncontrolled storage VOC emissions will be set equal to the total VOC emissions allowed under the new combined limit.

Uncontrolled Storage PE= 7,486 lb-VOC/year

Collection System Capital Investment (based on ductwork and clean-in-place system)

A common feature of all technically feasible options is that they require installation of a collection system for delivering the VOCs from the tanks to the common control device(s). Therefore, the following collection system analysis and cost estimate will be used in the cost effectiveness analysis for each control option.

Basis of Cost Information:

- The costs for the ductwork and the required clean-in-place (CIP) system are based on information from the 2005 Eichleay Study. The 2005 Eichleay study was used in development of District Rule 4694 Wine Fermentation and Storage Tanks and includes substantial information on the costs and details of the potential application of VOC controls to wineries and addresses many of the technical issues of the general site specific factors for wineries.
- The collection system consists of stainless steel place ductwork (stainless steel is required due to food grade product status) with isolation valving, connecting the 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 be included in the cost estimate.

- The District performed a cost survey of stainless steel ducting/piping and found that the values stated in the Eichleay report including the cost of inflation (applied as stated below) were cheaper; therefore, as a conservative estimate, the District will use the cost of ducting/piping from the Eichleay report which will include ducting, fittings, bolt up, handle, and install. A summary of the survey is included in Attachment C3.
- Eichleay's cost estimate for ducting included the duct, fittings, bolt up, handle and install. When additional costs, as allowed for in the EPA Control Cost Manual, were added onto the ducting cost estimate, the facility double counted some of the costs that Eichleay already accounted for in their estimate; therefore, the District did not allow the additional costs for foundations & supports, handling & erection, electrical, piping or painting.
- One of the major concerns of a manifold duct system is microorganisms spoiling the product, and transferring from one tank to another. It is necessary to design into the system a positive disconnect of the ducting system when the tanks are not being filled. There are a number of ways this can be done. In this case, an automatic butterfly valve with a physical spool to disconnect the tank from the duct will be utilized.
- An inflation amount of 22.89% for the period of 2005 to 2016 taken from United States Department of Labor Bureau of Labor Statistics' CIP Inflation Calculator will be used:
http://www.bls.gov/data/inflation_calculator.htm.

Annualized Capital Investment of Ductwork and Clean-In-Place (CIP) System

The annualized capital cost for the ductwork and CIP system serving the tank groups was established in Appendix C above. The annualized capital cost will be as follows:

Annualized Capital Investment = \$76,054/year

Option 1 - Collection of VOCs and Control by Thermal or Catalytic Oxidation (98% collection & control):

Design Basis

- Due to the additional flow rate from the storage tanks being minimal compared to the flow rate of the fermentation tanks, all of the storage tanks have already been included and analyzed in the control equipment associated with the fermentation tanks in Appendix C above.

Thermal/Catalytic Oxidizer Capital Cost

The annualized capital cost for thermal/catalytic oxidizers serving each of the tank groups was established in Appendix C above. The annualized capital cost will be as follows:

Annualized Capital Investment = \$25,223/year

Annual Operation and Maintenance Costs

Fuel and Electricity Costs

As discussed above, the control systems for these storage tanks is being designed for the worst case emission scenario which occurs during fermentation operations. When these tanks are being used for wine storage, the emissions and airflow rates will be considerably lower than when fermentation operations are taking place. Therefore, the blowers and thermal oxidizer that make up the control system will not be utilized at their maximum capacities. Due to the lower utilization rates, as a conservative estimate, it will be assumed that no auxiliary natural gas and electricity will be needed to operate the thermal oxidizer. Therefore, the auxiliary costs for natural gas and electricity consumption will be set equal to \$0 for the purposes of this top-down BACT analysis.

Total Operating and Maintenance Costs

Annual Costs (Based on: EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.2: VOC Destruction Controls, Chapter 2: Incinerators (September 2000), Table 2.10 - Annual Costs for Thermal and Catalytic Incinerators Example Problem. United States Environmental Protection Agency Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina 27711. EPA/452/B-02-001)⁹.

Thermal/Catalytic Oxidizer Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Supervisor	15% of operator		\$1,013
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Maintenance	100% of labor		\$6,753
Utility			
Natural Gas	not included		\$0
Electricity	not included		\$0
Total DAC			\$21,272
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$6,753 + \$1,013 + \$6,753 + \$6,753)	\$12,763
Administrative	2% of TCI (taken from Appendix C above)		\$3,096
Property Taxes	1% of TCI (taken from Appendix C above)		\$1,548
Insurance	1% of TCI (taken from Appendix C above)		\$1,548
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$33,955
Annual Operating Cost (DAC + IAC)			\$55,227

⁹ <http://epa.gov/ttn/catc/dir1/cs3-2ch2.pdf>

Total Annual Cost

$$\begin{aligned}\text{Total Annual Cost} &= \text{Regenerative Thermal Oxidizer System} + \text{Annual Cost} + \text{Ductwork/CIP Cost} \\ &= \$25,223 + \$55,227 + \$76,054 \\ &= \$156,504\end{aligned}$$

Emission Reductions

$$\begin{aligned}\text{Annual Emission Reduction} &= \text{Uncontrolled Storage Emissions} \times 0.98 \\ &= 7,486 \text{ lb-VOC/year} \times 0.98 \\ &= 7,336 \text{ lb-VOC/year} \\ &= 3.7 \text{ tons-VOC/year}\end{aligned}$$

Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} \div \text{Annual Emission Reductions}$$

$$\begin{aligned}\text{Cost Effectiveness} &= \$156,504/\text{year} \div 3.7 \text{ tons-VOC/year} \\ &= \$42,298/\text{ton-VOC}\end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the regenerative thermal oxidizer system, collection system ductwork and CIP equipment, and annual costs results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 2 - Collection of VOCs and control by carbon adsorption (95% collection and control):

Design Basis

- Due to the additional flow rate from the storage tanks being minimal compared to the flow rate of the fermentation tanks, all of the storage tanks have already been included and analyzed in the control equipment associated with the fermentation tanks in Appendix C above.
- Additional costs which were conservatively not evaluated in the cost analysis below include but are not limited to:
 - The cost for a tank to collect the condensed ethanol laden steam from regeneration of the carbon bed.
 - Annual steam costs required to regenerate the carbon beds.
 - Annual cooling water costs required to condense the ethanol laden steam from regeneration of the carbon beds and the condenser equipment.
 - Electricity costs of system fans, bed drying/cooling fans and cooling water pumps.
- Ethanol laden water is a byproduct produced when the carbon is regenerated with steam and the ethanol laden steam is condensed. The collected ethanol laden water will need to be disposed of and can be a significant cost; however, conservatively, the costs will not be included at this time.

Carbon Adsorption Capital Cost

The annualized capital cost for carbon adsorption equipment including the carbon serving each of the tank groups was established in Appendix C above. The annualized capital cost will be as follows:

Annualized Capital Investment = \$27,997/year

Total Operation and Maintenance Costs

The annual operation and maintenance costs for the carbon adsorption system are based on the information given in the EPA Air Pollution Control Cost Manual, Sixth Edition (January 2002), Section 3.1: VOC Recapture Controls, Chapter 1: Carbon Adsorbers (September 1999)¹². No value will be given for the ethanol that may be potentially recovered since this ethanol could actually result in additional disposal costs, which will also not be quantified in this analysis.

Carbon Adsorption Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Supervisor	15% of operator		\$1,013
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Maintenance	100% of labor		\$6,753
Utility			
Natural Gas from Steam Production (not included)			-
Electricity (not included)			-
Total DAC			\$21,272
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$6,753+ \$1,013 + \$6,753 + \$6,753)	\$12,763
Administrative	2% of TCI (taken from Appendix C above)		\$2,023
Property Taxes	1% of TCI (taken from Appendix C above)		\$1,012
Insurance	1% of TCI (taken from Appendix C above)		\$1,012
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$31,810
Annual Cost (DAC + IAC)			\$53,082

Total Annual Cost for Carbon Adsorption

Total Annual Cost = Carbon Adsorption Capital Cost + Annual Operating Cost + Ductwork/CIP Cost
 = \$27,997 + \$53,082 + \$76,054
 = \$157,133

Emission Reductions

$$\begin{aligned}\text{Annual Emission Reduction} &= \text{Uncontrolled Storage Emissions} \times 0.95 \\ &= 7,486 \text{ lb-VOC/year} \times 0.95 \\ &= 7,112 \text{ lb-VOC/year} \\ &= 3.6 \text{ tons-VOC/year}\end{aligned}$$

Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} \div \text{Annual Emission Reductions}$$

$$\begin{aligned}\text{Cost Effectiveness} &= \$157,133/\text{year} \div 3.6 \text{ tons-VOC/year} \\ &= \$43,648/\text{ton-VOC}\end{aligned}$$

The analysis demonstrates that the annualized purchase cost of the carbon adsorption system and collection system ductwork and CIP equipment results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 3 - Collection of VOCs and Control by Absorption/Scrubber (90% collection & control):

Design Basis

- Due to the additional flow rate from the storage tanks being minimal compared to the flow rate of the fermentation tanks, all of the storage tanks have already been included and analyzed in the control equipment associated with the fermentation tanks in Appendix C above.
- Recovered ethanol storage tank = \$40,000 (installed, as proposed in Project C-1133347)
- Connected electrical load for each unit is 2.5 horsepower which is assumed to operate continuously for 365 days.
- Electric power cost = \$0.1573/kWh (see regenerative thermal oxidizer Top Down BACT Analysis section above)
- Captured ethanol is recovered as a 10% solution suitable for disposal to an ethanol distillery at a cost of \$0.08 per gallon per NohBell
- Since the EPA Control Cost Manual does not contain a section for wet scrubbers controlling VOCs, conservatively, the costs in addition to the base equipment costs will be estimated from the Wet Scrubbers for Particulate Matter control from the EPA Control Cost Manual.

Scrubber Capital Equipment Cost

The annualized capital cost for scrubbers serving the tanks in fermentation and storage service was established in Appendix C above. The annualized capital cost is as follows:

$$\text{Annualized Capital Investment} = \$34,647/\text{year}$$

Wastewater Disposal Costs

Additionally, the water scrubber will generate ethanol-laden wastewater containing 6,064 lbs-ethanol annually (7,486 lb/year (uncontrolled fermentation emissions) x 0.81). Assuming a 10% solution, approximately 9,160 gallons of waste water (6,064 lbs-ethanol x gal/6.62 lb ÷ 0.10) will be generated annually. An allowance of \$0.08 per gallon is applied for disposal costs.

Annual disposal costs = 9,160 gallons x \$0.08/gallon = \$733

Total Operation and Maintenance Costs

Scrubber Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Supervisor	15% of operator		\$1,013
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Maintenance	100% of labor		\$6,753
Wastewater Disposal			
	10% Solution = 9,160 gal	\$0.08/gal	\$733
Utility			
Electricity	1 unit x 2.5 hp x 0.746 kW/hp x 16 hr/day x 365 day/yr = 10,892 kWh/yr	\$0.1573/kWh	\$1,713
Total DAC			\$23,718
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$6,753 + \$1,013 + \$6,753 + \$6,753)	\$12,763
Administrative	2% of TCI (taken from Appendix C above)		\$4,252
Property Taxes	1% of TCI (taken from Appendix C above)		\$2,126
Insurance	1% of TCI (taken from Appendix C above)		\$2,126
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$36,267
Annual Cost (DAC + IAC)			\$59,985

Total Annual Cost = Scrubber Capital Cost + Annual Operating Cost + Ductwork/CIP Cost
 = \$34,647 + \$59,985 + \$76,054
 = \$170,686

Emission Reductions

The District's BACT Guideline identifies an overall collection and control efficiency of 90% for absorption systems.

Annual Emission Reduction = Uncontrolled Storage Emissions x 0.90
= 7,486 lb-VOC/year x 0.90
= 6,737 lb-VOC/year
= 3.4 tons-VOC/year

Cost Effectiveness

Cost Effectiveness = Total Annual Cost ÷ Annual Emission Reductions

Cost Effectiveness = \$170,686/year ÷ 3.4 tons-VOC/year
= \$50,202/ton-VOC

The analysis demonstrates that the annualized purchase cost of the scrubber and annual costs results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 4 - Capture of VOCs and Condensation (70% collection & control):

Design Basis

- Due to the additional flow rate from the storage tanks being minimal compared to the flow rate of the fermentation tanks, all of the storage tanks have already been included and analyzed in the control equipment associated with the fermentation tanks in Appendix C above.
- Additional costs which were conservatively not evaluated in the cost analysis below include but are not limited to:
 - Glycol chiller system.
- This control technology recovers ethanol which potentially requires additional cost to dispose of. The District currently knows of two winery facilities that recover ethanol: Central Coast Wine Services and Terravant Winery, both located within the Santa Barbara County. Information from the Santa Barbara County APCD indicates that neither facility generates any revenue from the recovered ethanol. Central Coast Wine Services sends their recovered ethanol to a facility in San Luis Obispo that refines the recovered ethanol into motor vehicle fuels and Terravant Winery utilizes a UV system to destroy the ethanol. Although EcoPAS claims that there is value in the recovered ethanol in a future market that may be developed, the District will conservatively assume that there is no cost required to dispose/treat the recovered ethanol nor is there a value in the recovered ethanol.

Equipment Cost Refrigerated Condenser

The annualized capital cost for condensation systems serving the tank groups in fermentation and storage service were previously established in Appendix C above. The annualized capital cost is as follows:

Annualized Capital Investment = \$44,255/year

Total Operation and Maintenance Costs

Condensation Annual Costs			
Direct Annual Cost (DAC)			
Operating Labor			
Operator	0.5 hr/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Supervisor	15% of operator		\$1,013
Maintenance			
Labor	0.5 h/shift	\$18.50/hr x 0.5 hr/shift x 2 shift/day x 365 days/year x 1 unit	\$6,753
Maintenance	100% of labor		\$6,753
Chiller (Glycol)			
Not included at this time			-
Utility (Electricity)			
Not included at this time			-
Total DAC			\$21,272
Indirect Annual Cost (IAC)			
Overhead	60% of Labor Cost	0.6 x (\$6,753 + \$1,013 + \$6,753 + \$6,753)	\$12,763
Administrative	2% of TCI (taken from Appendix C above)		\$5,430
Property Taxes	1% of TCI (taken from Appendix C above)		\$2,715
Insurance	1% of TCI (taken from Appendix C above)		\$2,715
Annual Source Test	One representative test/year @ \$15,000		\$15,000
Total IAC			\$38,623
Annual Cost (DAC + IAC)			\$59,895

$$\begin{aligned}
 \text{Total Annual Cost} &= \text{Condenser Capital Cost} + \text{Annual Operating Cost} + \text{Ductwork/CIP Cost} \\
 &= \$44,255 + \$59,895 + \$76,054 \\
 &= \$180,204
 \end{aligned}$$

Emission Reductions

The District's BACT Guideline identifies an overall collection and control efficiency of 70% for absorption systems.

$$\begin{aligned}
 \text{Annual Emission Reduction} &= \text{Uncontrolled Fermentation Emissions} \times 0.70 \\
 &= 7,486 \text{ lb-VOC/year} \times 0.70 \\
 &= 5,240 \text{ lb-VOC/year} \\
 &= 2.6 \text{ tons-VOC/year}
 \end{aligned}$$

Cost Effectiveness

$$\text{Cost Effectiveness} = \text{Total Annual Cost} \div \text{Annual Emission Reductions}$$

Cost Effectiveness = \$180,204/year ÷ 2.6 tons-VOC/year
= \$69,309/ton-VOC

The analysis demonstrates that the annualized purchase cost of the refrigerated condenser system and annual costs results in a cost effectiveness which exceeds the District's Guideline of \$17,500/ton-VOC. Therefore this option is not cost-effective and will not be considered for this project.

Option 5 - Insulation, PVRV and "Gas-Tight" Tank Operation:

The only remaining control option in step 3 above has been deemed AIP for this class and category of source and per the District BACT policy is required regardless of the cost. Therefore, a cost effectiveness analysis is not required.

Step 5 – Select BACT

All identified feasible options with control efficiencies higher than the option proposed by the facility have been shown to not be cost effective. Each of these storage tanks is already equipped and/or operated in a manner that complies with Option 5, insulated tank, pressure/vacuum valve set within 10% of the maximum allowable working pressure of the tank and "gas tight" tank operation. These BACT requirements will be placed on the ATCs as enforceable conditions.

Appendix E

Statewide Compliance Certification

N-1237
E&J Gallo Winery-Livingston
Compliance Certification Statement
For Federal Major Permit Modifications
Compliance with District Rule 2201, Section 4.15.2

"I certify under penalty of law that all major stationary sources (Title V facilities) operated under my control in California are compliant with all applicable air emissions limitations and standards. The facilities included in this certification statement include the E&J Gallo Winery-Fresno, the E&J Gallo Winery-Livingston, and the E&J Gallo Winery-Modesto."



Mr. Steve Kidd
Vice President of Operations

08/01/16

Date

Appendix G

Quarterly Net Emissions Change (QNEC) Calculations

Appendix F

Quarterly Net Emissions Change (QNEC) Calculations

Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

$QNEC = PE2 - PE1$, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr

PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr

PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr

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

$$\begin{aligned} PE2_{\text{quarterly}} &= PE2_{\text{annual}} \div 4 \text{ quarters/year} \\ &= (83 + 744) \text{ lb/year} \div 4 \text{ qtr/year} \\ &= 206.75 \text{ lb PM}_{10}/\text{qtr} \end{aligned}$$

$$\begin{aligned} PE1_{\text{quarterly}} &= PE1_{\text{annual}} \div 4 \text{ quarters/year} \\ &= 83 \text{ lb/year} \div 4 \text{ qtr/year} \\ &= 20.75 \text{ lb PM}_{10}/\text{qtr} \end{aligned}$$

$$QNEC = PE2_{\text{quarterly}} - PE1_{\text{quarterly}}$$

Quarterly NEC [QNEC]					
Permits	Annual PE1, (lb/day)	Quarterly PE1, (lb/qtr)	Annual PE2, (lb/day)	Quarterly PE2, (lb/qtr)	QNEC (lb/qtr)
N-1237-776	83	20.75	$83 + 744 = 827$	206.75	186.00
N-1237-777	83	20.75	$83 + 744 = 827$	206.75	186.00
N-1237-778	54	13.50	$54 + 434 = 488$	122.00	108.50
N-1237-779	54	13.50	$54 + 434 = 488$	122.00	108.50
N-1237-780	54	13.50	$54 + 434 = 488$	122.00	108.50
N-1237-783	143	35.75	$143 + 744 = 887$	221.75	186.00
N-1237-784	143	35.75	$143 + 744 = 887$	221.75	186.00
N-1237-785	114	28.50	$114 + 2,480 = 2,594$	648.50	620.00

Appendix G

Draft ATCs

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: N-1237-776-1

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

MODIFICATION OF 6,000 GALLON NOMINAL (5,961 GALLON GAUGE) INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D601) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

CONDITIONS

1. The permittee shall not implement the changes authorized in this Authority to Construct until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3] Federally Enforceable Through Title V Permit
2. Authority to Construct (ATC) N-1237-776-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Prior to operating under the modifications authorized by this ATC, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 322 lb, and fourth quarter - 323 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
N-1237-776-1 Apr 17 2017 8:28AM - GARCIAJ Joint Inspection NOT Required

6. For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201] Federally Enforceable Through Title V Permit
7. When used for 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
8. When this tank is used for 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
9. 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
10. 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
11. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The daily wine/spirits storage throughput in this tank shall not exceed 5,961 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
13. The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of nominal tank capacity. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The daily VOC emissions from wine fermentation in this tank shall not exceed 20.8 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Annual VOC emissions from wine fermentation in this tank, calculated on a 12 month rolling basis, shall be determined by the following formula: $E = 6.2 \text{ lb per } 1000 \text{ gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per } 1000 \text{ gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from storage operations shall be determined either as the sum of the emissions for each individual wine/spirits movement based on the volume transferred in each wine/spirits movement and the batch-specific storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine/spirits movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine/spirits movements. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. For concentrations greater than 24 volume % up to and including 66 volume%, $a = -0.42159$, $b = 0.91316$ and $c = 0.016237$. For concentrations greater than 66 volume % up to and including 92 volume %, $a = 1.3799$, $b = -1.5774$ and $c = 0.87906$. For concentrations greater than 92 volume % up to and including 100 volume %, $a = 6.6071$, $b = -10.651$ and $c = 4.806$. [District Rule 2201] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201] Federally Enforceable Through Title V Permit
20. On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201] Federally Enforceable Through Title V Permit
21. When this tank is used for wine storage, the operator shall determine and record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
22. When this tank is used for 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
23. 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] Federally Enforceable Through Title V Permit
24. 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
25. If the emissions calculated for any rolling 12-month period exceeds the annual emissions limitation 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
26. 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
27. 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

DRAFT

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: N-1237-777-1

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

MODIFICATION OF 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D602) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

CONDITIONS

1. The permittee shall not implement the changes authorized in this Authority to Construct until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3] Federally Enforceable Through Title V Permit
2. Authority to Construct (ATC) N-1237-777-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Prior to operating under the modifications authorized by this ATC, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 322 lb, and fourth quarter - 323 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
N-1237-777-1 Apr 17 2017 8:28AM - GARCIAJ Joint Inspection NOT Required

6. For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201] Federally Enforceable Through Title V Permit
7. When used for 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
8. When this tank is used for 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
9. 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
10. 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
11. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The daily wine/spirits storage throughput in this tank shall not exceed 60,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
13. The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of tank capacity. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The daily VOC emissions from wine fermentation in this tank shall not exceed 20.8 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Annual VOC emissions from wine fermentation in this tank, calculated on a 12 month rolling basis, shall be determined by the following formula: $E = 6.2 \text{ lb per 1000 gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per 1000 gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from storage operations shall be determined either as the sum of the emissions for each individual wine/spirits movement based on the volume transferred in each wine/spirits movement and the batch-specific storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine/spirits movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine/spirits movements. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. For concentrations greater than 24 volume % up to and including 66 volume%, $a = -0.42159$, $b = 0.91316$ and $c = 0.016237$. For concentrations greater than 66 volume % up to and including 92 volume %, $a = 1.3799$, $b = -1.5774$ and $c = 0.87906$. For concentrations greater than 92 volume % up to and including 100 volume %, $a = 6.6071$, $b = -10.651$ and $c = 4.806$. [District Rule 2201] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201] Federally Enforceable Through Title V Permit
20. On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201] Federally Enforceable Through Title V Permit
21. When this tank is used for wine storage, the operator shall determine and record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
22. When this tank is used for 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
23. 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] Federally Enforceable Through Title V Permit
24. 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
25. If the throughput or ethanol content calculated for any rolling 12-month period exceeds the annual throughput or ethanol content 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 throughput or ethanol content limits for that rolling 12-month period will be deemed to have occurred so long as the calendar year throughput and ethanol content are below the annual throughput and ethanol content limitations. [District Rule 2201] Federally Enforceable Through Title V Permit
26. 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
27. 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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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: N-1237-778-1

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

MODIFICATION OF 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D301) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

CONDITIONS

1. The permittee shall not implement the changes authorized in this Authority to Construct until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3] Federally Enforceable Through Title V Permit
2. Authority to Construct (ATC) N-1237-778-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Prior to operating under the modifications authorized by this ATC, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 185 lb, and fourth quarter - 186 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director, APCO

Arnaud Marjollet, Director of Permit Services
N-1237-778-1 Apr 17 2017 8:28AM - GARCIAJ Joint Inspection NOT Required

6. For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201] Federally Enforceable Through Title V Permit
7. When used for 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 Rule 2201] Federally Enforceable Through Title V Permit
8. When this tank is used for 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 Rule 2201] Federally Enforceable Through Title V Permit
9. 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 Rule 2201] Federally Enforceable Through Title V Permit
10. 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
11. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The daily wine/spirits storage throughput in this tank shall not exceed 35,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
13. The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of tank capacity. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The daily VOC emissions from wine fermentation in this tank shall not exceed 12.1 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Annual VOC emissions from wine fermentation in this tank, calculated on a 12 month rolling basis, shall be determined by the following formula: $E = 6.2 \text{ lb per 1000 gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per 1000 gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from storage operations shall be determined either as the sum of the emissions for each individual wine/spirits movement based on the volume transferred in each wine/spirits movement and the batch-specific storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine/spirits movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine/spirits movements. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. For concentrations greater than 24 volume % up to and including 66 volume%, $a = -0.42159$, $b = 0.91316$ and $c = 0.016237$. For concentrations greater than 66 volume % up to and including 92 volume %, $a = 1.3799$, $b = -1.5774$ and $c = 0.87906$. For concentrations greater than 92 volume % up to and including 100 volume %, $a = 6.6071$, $b = -10.651$ and $c = 4.806$. [District Rule 2201] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201] Federally Enforceable Through Title V Permit
20. On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201] Federally Enforceable Through Title V Permit
21. When this tank is used for wine storage, the operator shall determine and record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
22. When this tank is used for 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
23. 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] Federally Enforceable Through Title V Permit
24. 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
25. If the emissions calculated for any rolling 12-month period exceeds the annual emissions limitation 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
26. 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
27. 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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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: N-1237-779-1

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

MODIFICATION OF 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D302) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

CONDITIONS

1. The permittee shall not implement the changes authorized in this Authority to Construct until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3] Federally Enforceable Through Title V Permit
2. Authority to Construct (ATC) N-1237-779-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Prior to operating under the modifications authorized by this ATC, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 185 lb, and fourth quarter - 186 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director, APCO

Arnaud Marjollet, Director of Permit Services
N-1237-779-1 Apr 17 2017 8:28AM - GARCIAJ Joint Inspection NOT Required

6. For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201] Federally Enforceable Through Title V Permit
7. When used for 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 Rule 2201] Federally Enforceable Through Title V Permit
8. When this tank is used for 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 Rule 2201] Federally Enforceable Through Title V Permit
9. 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 Rule 2201] Federally Enforceable Through Title V Permit
10. 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
11. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The daily wine/spirits storage throughput in this tank shall not exceed 35,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
13. The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of tank capacity. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The daily VOC emissions from wine fermentation in this tank shall not exceed 12.1 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Annual VOC emissions from wine fermentation in this tank, calculated on a 12 month rolling basis, shall be determined by the following formula: $E = 6.2 \text{ lb per 1000 gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per 1000 gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from storage operations shall be determined either as the sum of the emissions for each individual wine/spirits movement based on the volume transferred in each wine/spirits movement and the batch-specific storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine/spirits movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine/spirits movements. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. For concentrations greater than 24 volume % up to and including 66 volume%, $a = -0.42159$, $b = 0.91316$ and $c = 0.016237$. For concentrations greater than 66 volume % up to and including 92 volume %, $a = 1.3799$, $b = -1.5774$ and $c = 0.87906$. For concentrations greater than 92 volume % up to and including 100 volume %, $a = 6.6071$, $b = -10.651$ and $c = 4.806$. [District Rule 2201] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201] Federally Enforceable Through Title V Permit
20. On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201] Federally Enforceable Through Title V Permit
21. When this tank is used for wine storage, the operator shall determine and record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
22. When this tank is used for 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
23. 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] Federally Enforceable Through Title V Permit
24. 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
25. If the emissions calculated for any rolling 12-month period exceeds the annual emissions limitation 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
26. 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
27. 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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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-780-1

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

MODIFICATION OF 3,500 GALLON NOMINAL INSULATED AND GLYCOL JACKETED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D303) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

CONDITIONS

1. The permittee shall not implement the changes authorized in this Authority to Construct until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3] Federally Enforceable Through Title V Permit
2. Authority to Construct (ATC) N-1237-780-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Prior to operating under the modifications authorized by this ATC, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 185 lb, and fourth quarter - 186 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

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Seyed Sadredin, Executive Director, APCO

Arnaud Marjolle, Director of Permit Services
N-1237-780-1 Apr 17 2017 8:28AM - GARCIAJ Joint Inspection NOT Required

6. For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201] Federally Enforceable Through Title V Permit
7. When used for 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 Rule 2201] Federally Enforceable Through Title V Permit
8. When this tank is used for 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 Rule 2201] Federally Enforceable Through Title V Permit
9. 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 Rule 2201] Federally Enforceable Through Title V Permit
10. 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
11. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The daily wine/spirits storage throughput in this tank shall not exceed 35,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
13. The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of tank capacity. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The daily VOC emissions from wine fermentation in this tank shall not exceed 12.1 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Annual VOC emissions from wine fermentation in this tank, calculated on a 12 month rolling basis, shall be determined by the following formula: $E = 6.2 \text{ lb per 1000 gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per 1000 gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from storage operations shall be determined either as the sum of the emissions for each individual wine/spirits movement based on the volume transferred in each wine/spirits movement and the batch-specific storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine/spirits movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine/spirits movements. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. For concentrations greater than 24 volume % up to and including 66 volume%, $a = -0.42159$, $b = 0.91316$ and $c = 0.016237$. For concentrations greater than 66 volume % up to and including 92 volume %, $a = 1.3799$, $b = -1.5774$ and $c = 0.87906$. For concentrations greater than 92 volume % up to and including 100 volume %, $a = 6.6071$, $b = -10.651$ and $c = 4.806$. [District Rule 2201] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201] Federally Enforceable Through Title V Permit
20. On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201] Federally Enforceable Through Title V Permit
21. When this tank is used for wine storage, the operator shall determine and record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
22. When this tank is used for 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
23. 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] Federally Enforceable Through Title V Permit
24. 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
25. If the emissions calculated for any rolling 12-month period exceeds the annual emissions limitation 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
26. 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
27. 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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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT

PERMIT NO: N-1237-783-1

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

MODIFICATION OF 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D603) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

CONDITIONS

1. The permittee shall not implement the changes authorized in this Authority to Construct until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3] Federally Enforceable Through Title V Permit
2. Authority to Construct (ATC) N-1237-783-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Prior to operating under the modifications authorized by this ATC, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 293 lb, and fourth quarter - 294 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
N-1237-783-1 Apr 17 2017 8:28AM - GARCIA Joint Inspection NOT Required

6. For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201] Federally Enforceable Through Title V Permit
7. When used for 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
8. When this tank is used for 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
9. 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
10. 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
11. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The daily wine/spirits storage throughput in this tank shall not exceed 6,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
13. The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of tank capacity. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The daily VOC emissions from wine fermentation in this tank shall not exceed 20.8 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Annual VOC emissions from wine fermentation in this tank, calculated on a 12 month rolling basis, shall be determined by the following formula: $E = 6.2 \text{ lb per 1000 gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per 1000 gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from storage operations shall be determined either as the sum of the emissions for each individual wine/spirits movement based on the volume transferred in each wine/spirits movement and the batch-specific storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine/spirits movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine/spirits movements. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. For concentrations greater than 24 volume % up to and including 66 volume%, $a = -0.42159$, $b = 0.91316$ and $c = 0.016237$. For concentrations greater than 66 volume % up to and including 92 volume %, $a = 1.3799$, $b = -1.5774$ and $c = 0.87906$. For concentrations greater than 92 volume % up to and including 100 volume %, $a = 6.6071$, $b = -10.651$ and $c = 4.806$. [District Rule 2201] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

19. All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201] Federally Enforceable Through Title V Permit
20. On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201] Federally Enforceable Through Title V Permit
21. When this tank is used for wine storage, the operator shall determine and record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
22. When this tank is used for 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
23. 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] Federally Enforceable Through Title V Permit
24. 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
25. If the emissions calculated for any rolling 12-month period exceeds the annual emissions limitation 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
26. 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
27. 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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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-784-1

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

MODIFICATION OF 6,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (TANK D604) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

CONDITIONS

1. The permittee shall not implement the changes authorized in this Authority to Construct until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3] Federally Enforceable Through Title V Permit
2. Authority to Construct (ATC) N-1237-784-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Prior to operating under the modifications authorized by this ATC, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 293 lb, and fourth quarter - 294 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

CONDITIONS CONTINUE ON NEXT PAGE

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

Seyed Sadredin, Executive Director, APCO

Arnaud Marjollet, Director of Permit Services
N-1237-784-1 Apr 17 2017 8:28AM - GARCIAJ Joint Inspection NOT Required

6. For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201] Federally Enforceable Through Title V Permit
7. When used for 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
8. When this tank is used for 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
9. 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
10. 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
11. The ethanol content of wine/spirits stored in this tank shall not exceed 95.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The daily wine/spirits storage throughput in this tank shall not exceed 6,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
13. The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb per 1000 gallons of tank capacity. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The daily VOC emissions from wine fermentation in this tank shall not exceed 20.8 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Annual VOC emissions from wine fermentation in this tank, calculated on a 12 month rolling basis, shall be determined by the following formula: $E = 6.2 \text{ lb per 1000 gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per 1000 gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from storage operations shall be determined either as the sum of the emissions for each individual wine/spirits movement based on the volume transferred in each wine/spirits movement and the batch-specific storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine/spirits movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine/spirits movements. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. For concentrations greater than 24 volume % up to and including 66 volume%, $a = -0.42159$, $b = 0.91316$ and $c = 0.016237$. For concentrations greater than 66 volume % up to and including 92 volume %, $a = 1.3799$, $b = -1.5774$ and $c = 0.87906$. For concentrations greater than 92 volume % up to and including 100 volume %, $a = 6.6071$, $b = -10.651$ and $c = 4.806$. [District Rule 2201] Federally Enforceable Through Title V Permit

19. All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201] Federally Enforceable Through Title V Permit
20. On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201] Federally Enforceable Through Title V Permit
21. When this tank is used for wine storage, the operator shall determine and record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
22. When this tank is used for 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
23. 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] Federally Enforceable Through Title V Permit
24. 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
25. If the emissions calculated for any rolling 12-month period exceeds the annual emissions limitation 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
26. 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
27. 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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San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-1237-785-1

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: E & J GALLO WINERY
MAILING ADDRESS: ATTN: EHS MANAGER
18000 W RIVER RD
LIVINGSTON, CA 95334

LOCATION: 18000 W RIVER RD
LIVINGSTON, CA 95334

EQUIPMENT DESCRIPTION:

MODIFICATION OF 20,000 GALLON NOMINAL INSULATED STAINLESS STEEL WINE AND DISTILLED SPIRITS STORAGE TANK (D201) WITH PRESSURE/VACUUM VALVE AND INSULATION: ADD RED AND WHITE WINE FERMENTATION SERVICE AND ESTABLISH A COMBINED ANNUAL VOC EMISSION LIMIT FROM THE 8 TANKS IN THE CDF/PILOT WINERY SLC #3

CONDITIONS

1. The permittee shall not implement the changes authorized in this Authority to Construct until a final Part 70 permit amendment is issued by the District. [District Rule 2520, 6.3] Federally Enforceable Through Title V Permit
2. Authority to Construct (ATC) N-1237-785-0 shall be implemented concurrently, or prior to the modification and startup of the equipment authorized by this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
3. Prior to operating under the modifications authorized by this ATC, permittee shall surrender VOC emission reduction credits for the following quantity of emissions: 1st quarter - 0 lb, 2nd quarter - 0 lb, 3rd quarter - 1,153 lb, and fourth quarter - 1,154 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 2/18/16). [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers S-4727-1, C-1404-1, S-4751-1, S-4442-1, S-4773-1, S-4780-1, or S-4769-1 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
5. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

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

Seyed Sadredin, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services
N-1237-785-1 Apr 17 2017 8:28AM - GARCIAJ - Joint Inspection NOT Required

6. For the purposes of this permit, the "CDF/Pilot Winery SLC #3" shall consist of the following 8 winery tank permits: N-1237-776 through -780 and -783 through -785. [District Rule 2201] Federally Enforceable Through Title V Permit
7. When used for 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
8. When this tank is used for 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
9. 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
10. 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
11. The ethanol content of wine/spirits stored in this tank shall not exceed 24.0 percent by volume. [District Rule 2201] Federally Enforceable Through Title V Permit
12. The daily wine/spirits storage throughput in this tank shall not exceed 20,000 gallons per day. [District Rule 2201] Federally Enforceable Through Title V Permit
13. The daily VOC emissions for fermentation operations in this tank shall not exceed 3.46 lb/day per 1000 gallons of tank capacity. [District Rule 2201] Federally Enforceable Through Title V Permit
14. The daily VOC emissions from wine fermentation in this tank shall not exceed 69.2 lb/day. [District Rule 2201] Federally Enforceable Through Title V Permit
15. The total combined annual VOC emissions from all fermentation and storage operations from all tanks within the CDF/Pilot Winery SLC #3, calculated on a rolling 12-month basis, shall not exceed 7,486 pounds. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Annual VOC emissions from wine fermentation in this tank, calculated on a 12 month rolling basis, shall be determined by the following formula: $E = 6.2 \text{ lb per 1000 gallons} \times \text{annual red wine production (in gallons)} + 2.5 \text{ lb per 1000 gallons} \times \text{annual white wine production (in gallons)}$. [District Rule 2201] Federally Enforceable Through Title V Permit
17. Total annual VOC emissions from storage operations shall be determined either as the sum of the emissions for each individual wine/spirits movement based on the volume transferred in each wine/spirits movement and the batch-specific storage emission factor calculated using the equation(s) specified within this permit; or as the emissions for total annual wine/spirits movements and a single storage emissions factor, calculated using the equation(s) specified within this permit, based on the average ethanol content of the total annual wine/spirits movements. [District Rule 2201] Federally Enforceable Through Title V Permit
18. The annual VOC wine/spirits storage emission factor for each wine/spirits ethanol content shall be calculated using the following equation: $EF = a * P^2 + b * P + c$; where EF is the VOC emission factor in pounds of VOC per 1,000 gallons of wine/spirits throughput; P is the volume percent ethanol of the wine/spirits being transferred. For concentrations up to and including 24 volume %, $a = -0.38194$; $b = 0.97917$; and $c = 0$. [District Rule 2201] Federally Enforceable Through Title V Permit
19. All wine fermented in this tank shall be subject to the fermentation tank emission reduction measures of District Rule 4694 with actual production in this tank included in the minimum facility-wide fermentation emission reduction of 35% pursuant to District Rule 4694. [District Rule 2201] Federally Enforceable Through Title V Permit

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20. On a monthly basis, the permittee shall calculate and record the combined VOC emissions from all fermentation and storage operations, in pounds, from the tanks within the CDF/Pilot Winery SLC #3 for the rolling 12-month period, including calculation methods and parameters used. The VOC emissions shall be calculated by summing the VOC emissions from the previous 12 months from each tank. [District Rule 2201] Federally Enforceable Through Title V Permit
21. When this tank is used for wine storage, the operator shall determine and record, on a weekly basis, the total gallons of wine stored in the tank and the maximum temperature of the stored wine. [District Rule 4694] Federally Enforceable Through Title V Permit
22. When this tank is used for 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
23. 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] Federally Enforceable Through Title V Permit
24. 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 ethanol concentration of each wine/spirits movement; the calculated rolling 12-month wine/spirits ethanol content; and the calculated rolling 12-month VOC emission rate from the CDF/Pilot Winery SLC #3 (lb-VOC per rolling 12-month period, calculated monthly). [District Rules 2201 and 4694] Federally Enforceable Through Title V Permit
25. If the emissions calculated for any rolling 12-month period exceeds the annual emissions limitation 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
26. 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
27. 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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