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## Wastewater Feasibility Study



Beau Vigne Winery

4057 Silverado Trail, Napa CA 94558  
APN: 039-390-016

USE PERMIT  
WASTEWATER FEASIBILITY STUDY

Project and Site Background

Beau Vigne Winery owns and operates the existing Van Der Heyden Winery located at 4057 Silverado Trail in Napa, Ca (APN: 039-390-016). All domestic and process waste is currently disposed of below ground in on-site leachfields.

Beau Vigne is proposing to construct a new winery and tasting room (the Beau Vigne Winery) on the above referenced parcel. A production capacity of 14,000 gal of wine annually is proposed for the new Beau Vigne Winery. A new sanitary sewage system on-site is proposed to accommodate the winery employees, visitors, and events.

The parcel consists of existing vineyards, water supply well and treatment, an agricultural storage building, and an existing residence. The parcel is generally flat.

A site plan is provided in Waste Water Site Plan 1 (WW 1) displaying the existing site and proposed wastewater system improvements.

SANITARY SEWAGE (SS) - Winery

Existing System

The existing SS system for the winery consists of 700 lf of 24" deep infiltrators (E07-00942). Flow is 125 GPD from SS and 200 GPD from PW for a total of 325 GPD.

Existing Site Evaluation

A site evaluation was performed by Napa County under permit # E07-00942 and E04-0755. A total of 14 soil profiles were evaluated and logged for use. Test pits displayed a sandy clay loam surface soil which ranged in depth from 24" to 66" in depth. All soil displayed a moderate to strong sub-angular blocky structure. No mottling was observed. The Napa County Site Evaluation procedures indicate a loading rate of 0.33 GPD/SF.

Proposed Wastewater Flows

The proposed onsite sanitary wastewater flow rate is entirely associated with the proposed Winery. The use permit is requesting a peak number of 3 full time employees (15 gpcd), 1 part time employee (7.5 gpcd), along with 15 visitors for the tasting room (3gpcd), and a peak number of 30 visitors for special events. All events will have fully catered food with all preparation and cleanup occurring off site. The proposed wastewater flows are estimated as follows:

Peak (It is assumed that all flows are to occur in a single day).

*Employees*

3 FT employees	x	15 gpd/employee	=	45 gpd
1 PT employees	x	7.5 gpd/employee	=	7.5 gpd

*Tasting Room*

15 tasting visitors	x	3 gpd/visitor	=	45 gpd
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*Events*

30 event visitors	x	5 gpd/visitor	=	150 gpd
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TOTAL PROPOSED AVERAGE DESIGN FLOW = 247.5 GPD

Proposed Sanitary Sewage Loading

It is proposed to design and install a new subsurface drip system to accommodate all sanitary sewage needs. PW will not be combined within this system. Sizing as follows:

Proposed Septic System Design Flow: 250 gpd  
Proposed Pretreated Effluent Loading Rate: 0.33 gpd/sf (as required in E07-00942)

This loading rate is within the suitable range for the onsite soil types.

Proposed Sanitary Sewage Management System

With improvement to the site, the following tanks are proposed for the Beau Vigne Winery septic system. Because a pretreatment system is required for subsurface drip, a septic, recirculation, and sump tank are required for an AdvanTex pretreatment system. Other NSF Certified pretreatment systems may be reviewed at the time of Construction Drawings. Tank sizes are verified using the plumbing code commercial sizing formula.

$$\begin{aligned} V &= 1,125 + 0.75 \times Q \\ &= 1,125 + 0.75 \times 250 \text{ gpd} \\ &= 1312.5 \text{ gallons} \end{aligned}$$

Septic Tank: 1,500 gallons (6 days retention time)  
Recirculation Tank: 1,500 gallons (6 days' retention time, as required by Orenco)  
Sump/Dispersion Equalization Tank: 1,500 gallons (6 days retention time)

These tank volumes meet the minimum criteria for an AdvanTex pretreatment system.

### Leachfield Sizing

The area required for a primary sanitary sewer drip system is as follows:

Area Required	=	Flow/Application Rate
	=	250 gpd / 0.33 gpd/sf
	=	758 sf

### Reserve Area

200% reserve area, or 1,516 sf, is required for this site and is shown on the Wastewater Site Plan (WW1).

## PROCESS WASTEWATER (PW)

### Existing System

The existing on-site process wastewater system consists of 700 lf of standard leachline (Permit E07-00942). Sanitary wastewater and process wastewater are combined. It is proposed to isolate process and sanitary waste. The system consists of 700 lf of 24" deep infiltrators (E07-00942). Flow is 125 GPD from SS, 200 GPD from PW, = 325 GPD total.

### Existing Site Evaluation

A site evaluation was performed by Napa County under permit # E07-00942 and E04-0755. A total of 14 soil profiles were evaluated and logged for use. Test pits displayed a sandy clay loam surface soil which ranged in depth from 24" to 66" in depth. All soil displayed a moderate to strong sub-angular blocky structure. No mottling was observed. The Napa County Site Evaluation indicate a loading rate of 0.33 GPD/SF.

### Proposed System

The proposed PW system will utilize the (E) leachfield committed to PW only. The new PW connection will include a pump sump and septic tanks sized to accommodate the increase in flows. If it is determined that the (E) tanks can handle this flow and are watertight they can be reused.

### Proposed Flow Calculations

The winery is currently proposing a production of 14,000 gallons of wine per year. Using the County formula of (X gallons x 1.5 gallons H<sub>2</sub>O/gallon wine)/ 30 days = 700 GPD.

### Proposed Process Waste Loading

It is proposed to utilize the existing 700 LF of 24" deep standard infiltrators installed under permit E07-00942. The capacity of this system is 725 GPD. SS will not be combined within this system. Sizing as follows:

Proposed Septic System Design Flow:	700 gpd
Proposed Pretreated Effluent Loading Rate:	0.33 gpd/sf (as required in E07-00942)
Existing Septic Field Capacity:	325 gpd

Proposed Additional Septic Field Capacity: 375 gpd

This loading rate is within the suitable range for the onsite soil types.

Proposed Process Waste Management System

With improvement to the site, the following tanks are proposed for the Beau Vinge Winery septic system. Tank sizes are verified using the plumbing code commercial sizing formula. If it is determined the (E) septic tanks can handle this flow and are watertight, they can be reused.

$$\begin{aligned} V &= 1,125 + 0.75 \times Q \\ &= 1,125 + 0.75 \times 700 \text{ gpd} \\ &= 1,650 \text{ gallons} \end{aligned}$$

Septic Tank: 2,000 gallons (2.8 days retention time)  
Sump/Dispersion Equalization Tank: 1,000 gallons (1.4 days retention time)

Leachfield Sizing

The area required for a primary pressure distributed (PD) system is as follows:

$$\begin{aligned} \text{Area Required} &= (\text{Proposed Flow} - \text{Existing Flow}) / \text{Application Rate} \\ &= (700 \text{ gpd} - 325 \text{ gpd}) / 0.33 \text{ gpd/SF} \\ &= 1,136 \text{ SF of sidewall} \end{aligned}$$

$$\begin{aligned} \text{Length Required} &= \text{Area Required} / \text{Sidewall} \\ &= 1,136 / 1.67 \text{ SF/LF} \\ &= 681 \text{ LF} \end{aligned}$$

Reserve Area

Area of TP 1.a, 2.A, 7 & 8 show soil is limited to 48" which provides 1.67 SF/LF for a PD system. 100% reserve area, or 2,121 sf, is required for this site and is shown on the Wastewater Site Plan (WW1).

$$\begin{aligned} \text{Reserve Length Required} &= \text{Area Required} / \text{Sidewall} \\ &= 2,121 / 1.67 \text{ SF/LF} \\ &= 1,270 \text{ LF} \end{aligned}$$

Irrigation Reuse Alternative

In the event that groundwater monitoring cannot occur prior to the application for construction permits, it is also desired to have the ability to provide a pretreatment and irrigation reuse system. The Lyve Wastewater System has been used at Alpha Omega Winery to treat and reuse domestic wastewater for irrigation. Also, the Biomicrobics BioBarrier Membrane Bioreactor (MBR) is NSF 350 certified for reuse. A design for a BioBarrier MBR would include the following:

Septic Tank:	2,000 gallons
Processing Tank:	13,000 gallons
Treated Collection Sump:	1,500 gallons
Treated Storage Tank:	40,000 gallons

A storage tank would be provided for period in the winter when irrigation reuse cannot occur. As demonstrated in the process wastewater section of this study, more than sufficient vineyard is available onsite for irrigation dispersal of effluent. Approximately 1 acre is required for process wastewater, with 6+ acres of vineyard on-site.

If treatment, irrigation, and reuse is proposed for construction of this project, the project must first obtain approval from the San Francisco Bay Regional Water Quality Control Board (SFBREWQCB) for this use. Prior to issuance of building permits, the RWQCB will need to approve of the proposal, and issue Waste Discharge Requirements for the reuse of the sanitary sewage. If future groundwater monitoring cannot occur in a time schedule appropriate for building permits, or does not provide at least 24 inches of separation to groundwater, treatment, irrigation, and reuse will be required for the project. In this event, the RWQCB must also grant system approval prior to building permit issuance.

#### SUMMARY AND CONCLUSIONS

##### Sanitary Wastewater

With the proposed installation of a new sanitary management system, as discussed in this report, the site is capable of supporting the proposed sanitary sewage loads.

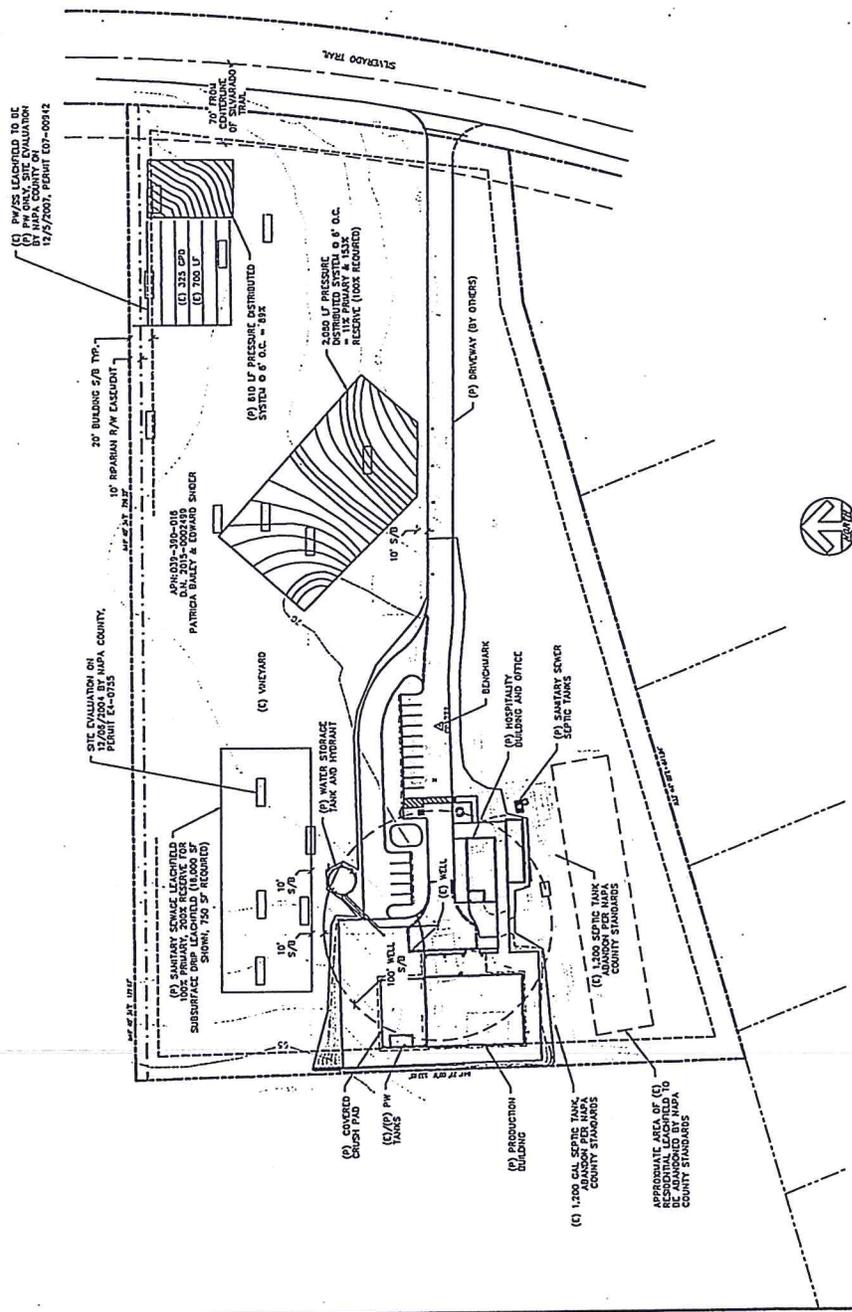
##### Process Wastewater

With the proposed installation of additional leachlines and reserve area as discussed in this report, the site is capable of supporting the proposed process wastewater loads.



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- LEGEND
- APPROXIMATE PROPERTY LINE
  - APPROXIMATE BANK CALCULATED
  - EDGE OF PAVEMENT
  - EDGE OF DRIVEWAY
  - PAVING COURSE THICKNESS
  - EDGE OF PROPOSED ROAD
  - CONTIGUOUS OF PROPOSED ROAD
  - PROPERTY LINE
  - CONTOUR
  - CONTROL POINT
  - FOUND ANCHOR POINT
  - WELL
  - CEILING/ROOF
  - SOILS PROFILE PIT
  - SET BACK
  - PROCESSED WASTE
  - UNPROCESSED WASTE
  - CALLOUT PER DAY



PROPOSED OVERALL SITE PLAN  
SCALE: 1" = 20'

