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Wastewater Feasibility
Study

Tesson Winery P22-00309
Planning Commission Hearing Date
April 16, 2025



August 11, 2022

Job No. 17-108

Kim Withrow, REHS
Environmental Health Division
Napa County Planning, Building and Environmental Services Department
1195 Third Street, Suite 210
Napa, CA 94559

Re: Onsite Wastewater Disposal Feasibility Study for the
Tesseron Vineyards Winery Use Permit Application
1000 Wall Road, Napa, California APNs 027-060-020, -022, -023 & 051-200-016

Dear Ms. Withrow:

At the request of Tesseron Vineyards we have evaluated the process and sanitary wastewater flows associated with the proposed winery Use Permit. We have also analyzed the capacity of the existing sanitary wastewater system serving the existing residence to determine if it is adequate to serve the newly proposed winery.

Existing improvements on the property include a residence, spring, groundwater wells, paved, dirt and gravel driveways, vineyards and the utility infrastructure associated with this type of residential and agricultural development.

The Use Permit being reviewed proposes the following operational characteristics:

- Wine Production:
 - 20,000 gallons of wine per year
 - Crushing, fermenting, aging and bottling

- Employees:
 - One (1) full-time employee
 - Three (3) seasonal employees

- Marketing Plan:
 - None

Please see the Tessoron Vineyards Winery Conceptual Site Improvement Plans prepared by Applied Civil Engineering (attached) for approximate locations of existing and proposed facilities.

The remainder of this letter describes the existing sanitary wastewater disposal system, its design capacity, peak flows associated with the existing uses and proposed changes in use (new winery) and our analysis and recommendations related to the system's ability to handle the anticipated wastewater flows.

It is planned that the winery process wastewater will be collected, treated, stored and used to irrigate onsite pastures in accordance with the California State Water Resources Control Board Winery General Order and therefore will not impact the existing septic system.

Existing Septic System

The winery facility is serviced by a pressure distribution type septic system. According to permit records on file with Napa County the system was designed for a peak flow of 1,200 gallons per day (gpd) for a residence with 10 potential bedrooms. It appears that the leach lines were designed based on a soil application rate of 0.35 gpd/sf of trench sidewall for clay loam soil. Trenches were designed to have 18 inches of rock under the bottom of the gravity distribution later and a total rock depth of 24 inches which provides 3 sf of sidewall per lineal foot of trench. The trenches were designed such that they would have 28 inches of acceptable soil beneath the trench bottom based on an acceptable soil depth of 52" as observed in a site evaluation performed by Napa County (6/22/1999).

Based on our review of the permit records it appears that the leach field consists of 1,157 lineal feet of leach line located on a hillside below the driveway. The plans for the system prepared by Bartelt Engineering indicate there are 3 – 1,500-gallon septic tanks and a 1,500-gallon dosing sump tank prior to the pressure distribution leach field.

Proposed Process Wastewater Design Flows

We have used the generally accepted standard that six gallons of winery process wastewater are generated for each gallon of wine that is produced each year and that 1.5 gallons of wastewater are generated during the crush period for each gallon of wine that is produced. Based on the 20,000 gallon production capacity and the expectation that both white and red wine will be produced at the winery, we have assumed a conservative 30 day crush period. Using these assumptions, the annual, average daily and peak winery process wastewater flows are calculated as follows:

$$\text{Annual Winery Process Wastewater Flow} = \frac{30,000 \text{ gallons wine}}{\text{year}} \times \frac{6 \text{ gallons wastewater}}{1 \text{ gallon wine}}$$

$$\text{Annual Winery Process Wastewater Flow} = 180,000 \text{ gallons per year}$$

$$\text{Average Daily Process Wastewater Flow} = \frac{180,000 \text{ gallons wastewater}}{\text{year}} \times \frac{1 \text{ year}}{365 \text{ days}}$$

Average Daily Winery Process Wastewater Flow = 493 gallons per day

$$\text{Peak Winery Process Wastewater Flow} = \frac{20,000 \text{ gallons wine}}{\text{year}} \times \frac{1.5 \text{ gallons wastewater}}{1 \text{ gallon wine}} \times \frac{1 \text{ year}}{30 \text{ crush days}}$$

Peak Winery Process Wastewater Flow = 1,000 gallons per day (gpd)

As noted above it is planned that the winery process wastewater will be collected, treated, stored and used to irrigate onsite pastures in accordance with the California State Water Resources Control Board Winery General Order and therefore winery process wastewater is not addressed further in this report.

Proposed Winery Sanitary Wastewater Design Flows

Typically the peak sanitary wastewater flow from the winery is calculated based on the number of winery employees, the number of daily visitors for tastings and the number of guests attending scheduled marketing events. However, since the winery does not propose any visitors or marketing events in this case the peak flow will be based solely on the number of employees. In accordance with Table 4 of the Napa County "Regulations for Design, Construction, and Installation of Alternative Sewage Treatment Systems" we have used a design flow rate of 15 gallons per day per employee. Based on these assumptions, the peak winery sanitary wastewater flows are calculated as follows:

Employees

Peak Sanitary Wastewater Flow = 4 employees X 15 gpd per employee

Peak Sanitary Wastewater Flow = 60 gpd

Existing Residence Peak Sanitary Wastewater Flow

The peak flow from the existing residence is calculated based on 120 gpd per bedroom and 10 potential bedrooms as follows:

Existing Residence Peak Sanitary Wastewater Flow = 120 gpd / bedroom x 10 bedrooms

Existing Residence Peak Sanitary Wastewater Flow = 1,200 gpd

Total Combined Sanitary Wastewater Flow

The total combined Sanitary Wastewater Flow includes the winery sanitary wastewater peak from plus the existing residence peak sanitary wastewater flow and is calculated as follows:

Total Combined Peak Sanitary Wastewater Flow = 60 gpd + 1,200 gpd

Total Combined Peak Sanitary Wastewater Flow = 1,260 gpd

Existing Septic System Capacity

As noted above the permit for the existing system indicates a design flow of 1,200 gpd.

Proposed Design Flow vs Existing Capacity

The predicted Combined Peak Sanitary Wastewater Flow for the proposed winery operational characteristics and existing residence (1,260 gpd) is more than the design capacity of the existing wastewater disposal system (1,200 gpd).

Recommendations

The recorded soil conditions and trench depth allow for a 0.952:1 ratio of trench length to flow (0.35 gpd/sf x 3sf/lf = 1.05 gpd/lf). Therefore, if the existing system is augmented by adding 5 feet to each of the existing 12 lines (60 lf total added resulting in 1,212 lf total) the capacity will be increased to 1,272 gpd which will meet the needs of the proposed winery Use Permit and existing residential uses. The proposed expansion area is shown on the attached Tesseron Vineyards Winery Conceptual Site Improvement Plans.

It is also noted that the system was designed with less than 36" of acceptable soil beneath the trench bottom as was standard at the time the system was permitted. However, today's codes require at least 36" of acceptable soil or 24" of acceptable soil with pre-treatment. In order to comply with today's codes the system will need to be outfitted with a pretreatment system such as an Orenco AdvanTex system to clean the wastewater prior to deliver to the pressure distribution septic system. Additional tankage will be required and the details can be provided at the time of building permit application.

Alternatively, the entire pressure distribution leach field can be abandoned in place and be replaced in the same location with a subsurface drip type septic system at the Owner's and Engineer's discretion.

Reserve Area

The reserve area will be subsurface drip. Using a clay loam application rate of 0.6 gpd / sf and a slope factor of 1.5 for slopes over 20% the required reserve area is calculated as follows:

$$\text{Required Reserve Area} = 1,260 \text{ gpd} / 0.6 \text{ gpd/sf} \times 1.5 \times 200\%$$

$$\text{Required Reserve Area} = 6,300 \text{ sf}$$

There is adequate area in the vicinity of Test Pit #4 from the 6/22/1999 site evaluation to designate as the 200% reserve area as shown on the Tesseron Vineyards Winery Conceptual Site Improvement Plans.

Summary

The calculations presented above illustrate that the wastewater flows associated with the proposed winery Use Permit will exceed the capacity of the existing wastewater system. However, by adding 60 of new pressure distribution leach line and a pretreatment system the system will be able to handle the increased domestic wastewater flows. All process wastewater will be handled by a separate system that will treat the process wastewater and re-use it to irrigation onsite pastures in accordance with the California State Water Resources Control Board Winery General Order.

We trust that this provides the information you need to process the subject Use Permit. Please feel free to contact us at (707) 320-4968 if you have any questions.

Sincerely,

Applied Civil Engineering Incorporated

By:

Michael R. Muelrath

Michael R. Muelrath RCE 67435
Principal



Copy:

Jerome Ledit, Tesseron Vineyards (via email)
Meagan Becker, In Vino Veritas (via email)
Jon Webb, Albion Surveys (via email)

Attachments:

Tesseron Vineyards Winery Conceptual Site Improvement Plans