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Wastewater Feasibility Study



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Napa County Planning, Building
& Environmental Services

March 15, 2017

Job No. 08-139

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
Vine Cliff Winery Use Permit Modification
7400 Silverado Trail, Napa County, California APN 032-030-027

Dear Ms. Withrow:

At the request of Vine Cliff Winery we have evaluated the process and sanitary wastewater flows associated with the proposed Use Permit Modification. We have also analyzed the design capacity of the existing process and sanitary wastewater system serving the winery facility to determine if it is adequate to serve the proposed changes in use.

It is our understanding that Vine Cliff Winery is currently permitted produce 48,000 gallons of wine per year and has an approved marketing plan that allows 4 visitors per day for tours and tastings, 24 luncheons per year for up to 50 guests, 6 dinners per year with up to 50 guests and one wine auction related event with up to 100 guests. Current permitted employee numbers are 8 full-time and 2 part-time.

The Use Permit Modification proposes to adjust the employee numbers and marketing plan to include the following:

- Employees:
 - Increase from 8 to 10 full-time employees
 - Increase from 2 to 6 part-time employees

- Marketing Plan:

- Daily Tours and Tastings by Appointment
 - Increase from 4 to 50 visitors per day maximum
- Private Food and Wine Events – Luncheons – No Change
 - 24 per year
 - 50 guests maximum
 - Portable toilets will be utilized
- Private Food and Wine Events – Dinners – No Change
 - 6 per year
 - 50 guests maximum
 - Portable toilets will be utilized
- Private Food and Wine Events – New Events
 - 6 per year
 - 100 guests maximum
 - Portable toilets will be utilized
- Wine Auction Event – No Change
 - 1 per year
 - 100 guests maximum
 - Portable toilets will be utilized

The remainder of this letter describes the existing process and sanitary wastewater system, its design capacity, peak flows associated with the proposed changes in use and our analysis and recommendations related to the system's capability to handle the anticipated wastewater flows.

Existing Septic System

The existing process and sanitary wastewater disposal system consists of a pressure distribution dispersal field with a total of 1,000 lineal feet of trench (divided into two subfield each with ten 50 lf laterals). There is also one 1,500 gallon septic tank at the residence, one 1,200 gallon domestic waste septic tank and one 1,500 gallon process waste septic tank at the winery, two 1,500 gallon septic tanks at the cave and three additional 1,500 gallon combined waste septic tanks and one 1,500 gallon dispersal field dosing sump tank located near the dispersal field.

According to permit records, the design flow for the dispersal field is 2,570 gallons per day (gpd) consisting of winery process and sanitary wastewater flows as well as sanitary wastewater flow from the existing five bedroom residence.

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 permitted 48,000 gallon production capacity and the expectation that both white and red wine will be produced at the winery, we have assumed a 45 day crush period. Using these assumptions, the annual, average daily and peak winery process wastewater flows are calculated as follows:

- Marketing Plan:
 - Daily Tours and Tastings by Appointment
 - Increase from 4 to 50 visitors per day maximum
 - Private Food and Wine Events – Luncheons – No Change
 - 24 per year
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$$\text{Annual Winery Process Wastewater Flow} = \frac{48,000 \text{ gallons wine}}{\text{year}} \times \frac{6 \text{ gallons wastewater}}{1 \text{ gallon wine}}$$

$$\text{Annual Winery Process Wastewater Flow} = 288,000 \text{ gallons per year}$$

$$\text{Average Daily Process Wastewater Flow} = \frac{288,000 \text{ gallons wastewater}}{\text{year}} \times \frac{1 \text{ year}}{365 \text{ days}}$$

$$\text{Average Daily Winery Process Wastewater Flow} = 789 \text{ gallons per day}$$

$$\text{Peak Winery Process Wastewater Flow} = \frac{48,000 \text{ gallons wine}}{\text{year}} \times \frac{1.5 \text{ gallons wastewater}}{1 \text{ gallon wine}} \times \frac{1 \text{ year}}{45 \text{ crush days}}$$

$$\text{Peak Winery Process Wastewater Flow} = 1,600 \text{ gallons per day (gpd)}$$

Proposed Sanitary Wastewater Design Flows

The peak sanitary wastewater flow from the winery is calculated based on the number of winery employees, the number of daily visitors for tours and tastings and the number of guests attending marketing events. In accordance with Table 4 of the Napa County Planning, Building and Environmental Services Department - Environmental Health Division "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 and 3 gallons per day per visitor for tours and tastings. Table 4 does not specifically address design wastewater flows for guests at marketing events. Since there is no commercial kitchen at the facility and all food service will be catered, we have conservatively estimated 5 gallons of wastewater per guest at marketing events. Furthermore, in order to minimize wastewater system impacts, daily tours and tastings and marketing events will not be scheduled to occur on the same day and all events with more than 15 guests in attendance will utilize portable toilets. Based on these assumptions, the peak winery sanitary wastewater flows are calculated as follows:

Employees

$$\text{Peak Sanitary Wastewater Flow} = 16 \text{ employees} \times 15 \text{ gpd per employee}$$

$$\text{Peak Sanitary Wastewater Flow} = 240 \text{ gpd}$$

Daily Tours and Tastings

$$\text{Peak Sanitary Wastewater Flow} = 50 \text{ visitors per day} \times 3 \text{ gallons per visitor} \times 50\% \text{ utilization factor}$$

$$\text{Peak Sanitary Wastewater Flow} = 75 \text{ gpd}$$

Private Food and Wine Events (30 per year)

$$\text{Peak Sanitary Wastewater Flow} = 50 \text{ guests} \times 5 \text{ gallons per guest}$$

$$\text{Peak Sanitary Wastewater Flow} = 250 \text{ gpd}$$

Private Food and Wine Events & Wine Auction Event (7 per year)

Peak Sanitary Wastewater Flow = 100 guests X 5 gallons per guest

Peak Sanitary Wastewater Flow = 500 gpd

Total Peak Winery Sanitary Wastewater Flow

Assuming that daily tours and tastings and marketing events do not occur on the same day and that portable toilets will be used for all events with more than 15 guests in attendance, the total peak winery sanitary wastewater flow is calculated as follows:

Total Peak Winery Sanitary Wastewater Flow = 240 gpd + 75 gpd

Total Peak Winery Sanitary Wastewater Flow = 315 gpd

Combined Peak Winery Wastewater Flow

Combined Peak Winery Wastewater Flow = Peak Winery Process Wastewater Flow + Total Peak Winery Sanitary Wastewater Flow

Combined Peak Winery Wastewater Flow = 1,600 gpd + 315 gpd

Combined Peak Winery Wastewater Flow = 1,915 gpd

Peak Residential Wastewater Flow

According to the permit records the existing system was designed for an existing five bedroom residence. There is a second residence on the property however it is serviced by its own separate septic system. Therefore, using a design flow of 120 gpd per bedroom the peak residential wastewater flow is calculated as follows:

Peak Residential Wastewater Flow = 120 gpd per bedroom x 5 bedrooms

Peak Residential Wastewater Flow = 600 gpd

Total Combined Peak Wastewater Flow

The total combined peak wastewater flow is the sum of the Combined Peak Winery Wastewater Flow and the Peak Residential Wastewater Flow and is calculated as follows:

Total Combined Peak Wastewater Flow = Total Peak Winery Wastewater Flow + Peak Residential Wastewater Flow

Total Combined Peak Wastewater Flow = 1,915 gpd + 600 gpd

Total Combined Wastewater Flow = 2,515 gpd

Proposed Design Flow vs Existing Capacity

The predicted Total Combined Peak Winery Wastewater Flow for the above described operational characteristics (2,515 gpd) is approximately equal to but less than the design capacity of the existing wastewater disposal field (2,570 gpd). This is based on peak usage assuming full staffing and including visitors during the harvest season. At most other times of the year the flows are expected to be significantly lower.

Recommendations

Since the proposed wastewater flows associated with the subject Use Permit Modification are less than the design flow for the existing septic system there are no physical system improvements required at this time. However, we recommend the following measures to ensure long term viability of the system:

1. The system should be inspected by a licensed sewage contractor and tank pumping, maintenance and repairs should be performed as required.
2. The system should be entered into Napa County's Alternative Sewage Treatment System monitoring program which requires semi-annual monitoring and reporting by an authorized Service Provider.
3. The water supply lines serving the house, winery and cave should be outfitted with individual water meters. These meters can be used in the future if needed to verify flows in conformance with expectations and to troubleshoot the source of any excess flows and adjust operations, if needed, to maintain compliance with the design of the existing septic system.
4. A septic system reserve area should be established to ensure that there is adequate area to install a replacement septic system in the future.

Summary

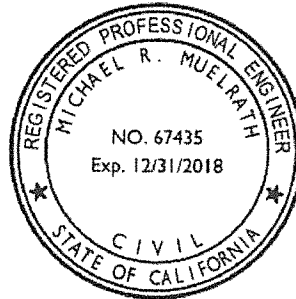
The calculations presented above illustrate that the wastewater flows associated with the proposed Use Permit Modification will result in design flows that are within the design capacity of the existing septic system provided that the approval is conditioned to include the recommendations outlined above and to ensure that tours and tastings and marketing events are not scheduled on the same day and that portable toilets are used for all marketing events with more than 15 guests in attendance. No modifications to the disposal field are required at this time.

We trust that this provides the information you need to process the subject Use Permit Modification. 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:

Charles and Nell Sweeney, Vine Cliff Winery (via email)
Michael Sweeney, Vine Cliff Winery (via email)
George Monteverdi, Monteverdi Consulting (via email)

