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Wastewater Feasibility Study



November 28, 2018

Job No. 17-139

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
 Fontanella Winery Use Permit Modification Application
 1721 Partrick Road, Napa, CA 94558 APN 050-010-018

Dear Ms. Withrow:

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

The current Use Permit and Proposed Use Permit Modification conditions are outlined below:

Category	Existing	Proposed	Notes
Winery Production	30,000 gallons per year	30,000 gallons per year	
Employees	5	6	
Tours and Tasting Visitors	10 / day peak 10 / week avg	14 / day peak 98 / week max	
Marketing Events			
30 guests	9 / year	6 / year	Food catered
8 guests	0 / year	50 / year	Food catered
75 guests	0 / year	1 / year	Food catered
100 guests	1 / year	0 / year	Food catered
150 guests	0 / year	1 / year	Food catered

Existing structures on the property include winery buildings and a single-family residence. One existing winery building will be removed and a new winery building will be constructed to replace it as part of the project.

Please see the Fontanella Winery Use Permit Modification Conceptual Site Plans for approximate locations of existing facilities.

The remainder of this letter describes the existing process and sanitary wastewater disposal systems, their 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 Domestic Wastewater Septic System & Proposed Design Flows

The winery facility and existing residence are serviced by a combined sanitary sewer and process wastewater pretreatment and subsurface drip type dispersal system. The septic and process waste settling tanks are located at the back of the winery facility and the pre-treatment filter and dispersal system are located just north of the winery facility on the east side of the driveway. The system was constructed in 2007-2008 under permit E07-00535. The system consists of two 2,000 gallon process waste settling tanks, one 3,000 gallon winery and residence sanitary sewer septic tank, one 2,000 gallon winery process and sanitary waste effluent sump tank, one 2,000 gallon recirculation / blend tank with AdvanTex AX100 pretreatment system, one 3,000 gallon dosing tank and a three zone subsurface drip dispersal field totaling 3,600 lf of drip tubing. According to the design report prepared by Bartelt Engineering and the installation permit the system was designed for approximately 1,000 gpd of winery process wastewater, 720 gpd of residential wastewater and 280 gpd of winery sanitary wastewater for a total design capacity of 2,000 gallons per day.

Proposed Residential Wastewater Flows

The septic system was designed for a four bedroom main residence and also included design capacity to accommodate a future two bedroom second dwelling unit (not yet constructed). Based on this configuration there would be a total of 6 bedrooms (existing plus future) serviced by the septic system. At 120 gpd per bedroom this amounts to 720 gallons per day.

Proposed Winery 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 tastings and the number of guests attending scheduled marketing events. 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 and 3 gallons per day per visitor for tastings. Table 4 does not specifically address design wastewater flows for guests at marketing events. We have conservatively assumed 5 gallons of wastewater per guest at marketing events with food that is brought in by an outside catering service. Based on these assumptions, the peak winery sanitary wastewater flows are calculated as follows:

Employees

Peak Sanitary Wastewater Flow = 6 employees X 15 gpd per employee
Peak Sanitary Wastewater Flow = 90 gpd

Daily Tastings

Peak Sanitary Wastewater Flow = 14 visitors per day X 3 gallons per visitor
Peak Sanitary Wastewater Flow = 42 gpd

8 Person Marketing Event with Light Food

Peak Sanitary Wastewater Flow = 8 guests X 5 gallons per guest
Peak Sanitary Wastewater Flow = 40 gpd

30 Person Marketing Event with Catered Meals

Peak Sanitary Wastewater Flow = 30 guests X 5 gallons per guest
Peak Sanitary Wastewater Flow = 150 gpd

75 Person Marketing Event with Catered Meals

Peak Sanitary Wastewater Flow = 75 guests X 5 gallons per guest
Peak Sanitary Wastewater Flow = 375 gpd

150 Person Marketing Event with Catered Meals

Peak Sanitary Wastewater Flow = 150 guests X 5 gallons per guest
Peak Sanitary Wastewater Flow = 750 gpd

Total Peak Winery Sanitary Wastewater Flow

In order to manage the peak sanitary wastewater flows delivered to the disposal field portable toilets will be used for all events with more than 30 guests in attendance and no more than one marketing event will be held on any one day. Furthermore, daily tours and tastings will be suspended when events that have more than 8 guests have been scheduled. Therefore, the worst-case peak winery sanitary wastewater flow is calculated based on 6 employees and 30 guests at a marketing event. The peak flow for this scenario is calculated as follows:

Total Peak Winery Sanitary Wastewater Flow = 90 gpd + 150 gpd

Total Peak Winery Sanitary Wastewater Flow = 240 gpd

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 proposed 30,000 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:

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

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

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

$$\text{Average Daily Winery Process Wastewater Flow} = 493 \text{ gallons per day}$$

$$\text{Peak Winery Process Wastewater Flow} = \frac{30,000 \text{ gallons wine}}{\text{year}} \times \frac{1.5 \text{ gallons wastewater}}{1 \text{ gallon wine}} \times \frac{1 \text{ year}}{45 \text{ crush days}}$$

$$\text{Peak Winery Process Wastewater Flow} = 1,000 \text{ gallons per day (gpd)}$$

Total Design Flow

The total wastewater design flow is 720 gpd for the 4 bedroom residence and future 2 bedroom second dwelling unit + 240 gpd for winery sanitary wastewater + 1,000 gpd for winery process wastewater for a total of 1,960 gpd.

Proposed Design Flows vs Existing Capacity

The total wastewater design flow of 1,960 gpd is less than the system design flow of 2,000 gpd.

Summary

The calculations and discussions presented above illustrate that the wastewater flows associated with the proposed Use Permit Modification can be accommodated within the capacity of the existing sanitary and process wastewater treatment and dispersal system. The key conditions for making these findings are as follows:

- 1) Daily tours and tastings visitors will be suspended on days when events are held with more than 8 guests in attendance and portable toilets will be used for all events with more than 30 guests.

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:

Jeff and Karen Fontanella (via email)
Beth Painter (via email)

Attachments:

Fontanella Winery Use Permit Modification Conceptual Site Plans