

June 7, 2022

Jered Lawson
Pie Ranch
2080 CA Highway One
San Mateo County, California

**RE: Wastewater Flow Analysis for the Existing Septic System
Serving the Ranch House (Destroyed in Fire) and Outdoor Kitchen
2080 CA Highway One, San Mateo County, California
APN:**

Dear Jered,

Sherwood Design Engineers (SDE) has prepared this memorandum at your request to quantify the wastewater flow directed to the existing septic system currently serving the main house which was destroyed in the 2019 CZU Lightning Complex Fire, and the existing Outdoor Kitchen.

Our understanding of the existing septic system is based upon records made available to SDE and site observations. The previous farmhouse (currently being replaced) was/will be a 4 bedroom single family dwelling. The outdoor commercial kitchen includes cooking apparatus (grill and burners) and a sink used for dishwashing and handwashing. The following describes the project setting, the wastewater flows, and the capacity of the existing septic system including the septic tank and leachfield.

1.0 PROJECT SETTING

Pie Ranch is located at 2080 CA-1 (Highway One) in San Mateo County, California and encompasses two parcels (089-230-210 and 089-230-280). The property proposed for development, referred to as the "lower slice", is situated immediately adjacent to Highway One and encompasses 13.5 acres, with 4.5 acres of land used for crop production and 3 acres used for animal husbandry.

The overall vision for Pie Ranch is to create a regenerative farming and food system education center to build community; provide a space for healing our relationships with ourselves, each other and the earth; steward the land and the environment; sequester carbon through climate friendly farming techniques; engage and employ young people on the land; share resources with new farmers; make healthy food accessible to Bay Area communities; leverage privilege to address systemic racism; dismantle white supremacy and all forms of oppression; create space for joy and celebration; and build a beloved community through strategic partnerships. Pie Ranch runs educational and community-based programs throughout the year.

The 13.5 acre property was surveyed by Bowman & Williams Consulting Engineers in June 2015 and it shows that 13 buildings are currently on site including the farmhouse, offices, and a farm stand. Prior to the 2019 Fire, the farmhouse was used for full time residents and employees/management of the property.

2.0 WASTEWATER FLOW ESTIMATES

Flow estimates are presented in Table 1 below.

Wastewater Use	Unit Flow (gallons/unit/day)	Total Flow (gallons/day)
Farmhouse (4 bedroom)	150	600
Outdoor Kitchen (up to 35 campers)	2	70
Total		670

According to the San Mateo County Local Agency Management Program (LAMP) for Onsite Wastewater Treatment Systems, wastewater from a Single-Family Residences is estimated to be 150 gal/day per bedroom. Using the USEPA Onsite Wastewater Treatment Systems Manual, flows from the outdoor kitchen were assumed to be similar to a “cafeteria” (USEPA, Table 3-6) and were estimated to be 2 gallons per camper to account for dishwashing and handwashing. (bathroom visits for campers are not directed to the existing system).

The total gallons per day, assuming campers are on site, is 670 gallons per day (gpd).

3.0 SEPTIC SYSTEM CAPACITY

According to the San Mateo County Local Agency Management Program (LAMP) for Onsite Wastewater Treatment Systems, Septic Tanks are required to be 1,500 gal minimum; increased capacity per bedroom count or daily design flow. The existing septic tank is 1,500 gallons and the predicted flow from the existing connections is 670 gpd, resulting in over two (2) days of capacity of the projected flow ($2 \times 670 = 1,340$ gallons). The existing tank has adequate capacity for the Farmhouse and Outdoor Kitchen.

Percolation testing was performed by Conn Law, a licensed septic contractor, on March 15, 2022. San Mateo County Environmental Health (SMCEH) staff witnessed the end of percolation testing. According to the SMCEH staff notes the average percolation rate of the six percolation tests was calculated to be 5 inches per hour. Based on the results of the percolation tests, the soil conditions encountered, and the intended disposal of wastewater, an application rate of 0.74 gallons per day per square foot (gpd/sf) of leachfield area was selected to size the required leachfield system for based on SMCEH guidelines.

Using an application rate of 0.74 gallons per day per square foot and the peak daily flow of approximately 670 gallons per day of wastewater, an estimated 496 square feet of leachfield trench will be required. Typical leachfield trench construction includes leachfields that are 1.5 feet wide and 5 feet deep, with an effective depth of 2 feet creating a sidewall area that is 4 square feet per lineal foot which is the maximum allowable effective leaching area. Given the allowable effective leaching area of these trenches is 4 square feet (sf) per linear foot of leachline, approximately 227 lineal feet of leachfield are required.

The current system has two 125 foot long trenches that are each 8 feet deep with a 6 foot effective depth, resulting in 12 square feet per lineal foot of leachfield. Using the limit of 4 sf per lineal foot of allowable effective leaching area the existing system meets the requirements with 250 lineal feet of leachfield.

4.0 CONCLUSIONS

1. The flow from the Farmhouse and the Outdoor Kitchen total 670 gallons per day.
2. The existing 1,500 gallon septic tank has a two day capacity ($2 \times 670 = 1,340$ gallons)
3. Using data from recently completed percolation tests and from the information regarding the existing leachfield layout the leachfield has adequate capacity for the proposed use of the system.

We thank you for this opportunity to submit this proposal and look forward to beginning work with you on this exciting project!

Sincerely,



Robyn Cooper, MS, PE
Principal