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Wastewater Feasibility Report

The Winery at Mount Veeder Use Permit P22-00248-UP, Exception to the Conservation Regulations P25-00088-UP, and Exception to the Roads and Street Standards
Planning Commission Hearing - June 4, 2025

WINERY WASTEWATER FEASIBILITY REPORT

THE WINERY AT MT. VEEDER
1300 MOUNT VEEDER
NAPA, CA 94558

APN 034-230-029

Prepared by:
Margaret Schneider, EIT
Under Responsible Charge of Bruce Fenton, PE

Property Owner:
P&M Vineyard Holdings, LLC
PO Box 1480
Sebastopol, CA 95473

Project# 4121017.0
March 21, 2023

1515 Fourth Street, Napa, CA 94559 www.rsacivil.com 707.252.3301.v 707.252.4966.f

Table of Contents

ATTACHMENTS

1. Vicinity Map, USGS Map, Soils Map, Firmette Map
2. Site Evaluation
3. Biofiltro Process Wastewater Treatment System
4. Treated Process Wastewater Irrigation Water Balance
   Vineyard Area to Receive Treated Process Wastewater Irrigation

INTRODUCTION

The Winery at Mt. Veeder project (APN 034-230-029) proposes to submit for a winery use permit. The parcel has an existing residence that is served by an existing septic system. The client proposes to retain the existing residences, and the existing septic systems per Napa County guidelines. A new septic system will be installed for the proposed winery.

This report will demonstrate that the proposed domestic and process wastewater systems are sufficiently sized to accommodate peak flows from the proposed winery program. Attachment 1 contains a Site Location Map and a USGS Site Map showing parcel topography, features and boundary.

EXISTING CONDITIONS

There is an existing residence with a dedicated septic system to remain.

SITE EVALUATION

RSA$^+$ conducted a site evaluation on the parcel on August 27, 2021. Attachment 2 contains a copy of the Site Evaluation Report.

The site evaluation was conducted by Margaret Schneider of RSA$^+$ and observed by Maureen Shields-Bown of Napa County Environmental Management.

WINERY DOMESTIC WASTEWATER CHARACTERISTICS

The domestic wastewater system for the winery will accommodate the unit values in Table 1 below. The proposed number of visitors and employees is shown in Table 1 below. The projected flow is based on Napa County Environmental Management guidelines. The following is a summary of the estimated flows from the winery.

Table 1

Use	Source	Number	Projected Flow (gpd)	Total Flow No Event Day (gpd)	Total Flow Small Event Day (gpd)	Total Flow Large Event Day (gpd)
Winery	Part-Time Employees	2	15	30	30	30
	Full-Time Employees	2	15	30	30	30
	Visitors	18	3	54		
	Small Marketing Event Guests	25	10		250	
	Large Marketing Event Guests	50	10			500
Total Peak Wastewater Flow				**114**	**310**	**560**

On large event days portable toilets will be used.

DOMESTIC WASTEWATER – SUB SURFACE DRIP

A septic system and dispersal field will be designed for the proposed winery. An Orenco AdvanTex treatment system and a new dispersal field are proposed.

Domestic wastewater from the proposed winery and residence will flow into a new 810-gallon septic tank. Wastewater will then flow into an 810-gallon recirculation tank attached to an AdvanTex treatment pod. After treatment, wastewater will flow to an 810-gallon dosing tank where it will be pumped to the proposed distribution field.

The subsurface drip field is sized to meet Napa County Environmental Management guidelines. The distribution field will be placed where the most limiting soil type was clay loam with a moderated subangular-blocky structure. The allowable application rate for this soil type is 0.2 gallons/square foot/day for pretreated effluent. Peak daily domestic wastewater flow is 310 gallons/day.

$$Winery\ Dispersal\ Field\ Area\ (primary) = \frac{310 gpd}{0.2\ gpd/sf} = 1{,}550\ square\ feet$$

In addition to the primary dispersal area of 1,550 square feet, a 200% reserve area is required for the winery and residence. The reserve area will be located in an area where the soil application rate is also 0.2 gallons/square foot/day.

$$Winery\ Dispersal\ Field\ Area\ (reserve) = 200\% \times \frac{310\ gpd}{0.2\ gpd/sf} = 3{,}100\ square\ feet$$

$$Residential\ Dispersal\ Field\ Area\ (reserve) = 200\% \times \frac{360\ gpd}{0.2\ gpd/sf} = 3{,}600\ square\ feet$$

The total combined area required for the reserve fields for the domestic winery wastewater and residence is 5,990 square feet. These areas are shown on the sheet UP4.0 of the Use Permit Plans included in Attachment 4.

WINERY PROCESS WASTEWATER CHARACTERISTICS

The following is a summary of the winery wastewater characteristics:

Wine Production:	25,000 gallons of wine per year 2.38 gallons of wine per case 10,504 cases/year
Wastewater Production:	5 gallons of wastewater/gallon of wine 125,000 gallons/year
Peak Daily Waste Water Flow:	Crush Period = 30 days Annual wine production x 2 / 30 1,667 gallons/day
Average Daily Flow:	125,000/365 = 342 gallons/day

Monthly Wastewater Flows:

Table 2

	% By Month	Waste/Month	
Sep	15%	18,750	Gal/Month
Oct	15%	18,750	Gal/Month
Nov	11%	13,125	Gal/Month
Dec	8%	9,375	Gal/Month
Jan	4%	5,000	Gal/Month
Feb	6%	7,500	Gal/Month
Mar	6%	7,500	Gal/Month
Apr	5%	5,625	Gal/Month
May	6%	7,500	Gal/Month
Jun	7%	8,750	Gal/Month
Jul	9%	10,625	Gal/Month
Aug	10%	12,500	Gal/Month
Totals	100%	125,000	Gal/Year

WINERY PROCESS WASTEWATER – SURFACE DRIP IRRIGATION

The treated process wastewater will be treated by a Biofiltro treatment system or equivalent system, before it is surface dripped on vines. According to Napa County Environmental Management Sewage Treatment System Design Guidelines, winery process wastewater must be treated prior to surface discharge. Based on our experience, winery wastewater characteristics are as follows:

Characteristics	Units	Average
pH		3.5
BOD5	mg/l	6000
TSS	mg/l	500
Nitrogen	mg/l	20
Phosphorus	mg/l	10

The treatment goal is 160 mg/L BOD and 80 mg/L TSS. To meet this treatment goal a treatment train including a sump basin, Biofiltro control unit, treatment tank with Biofiltro BIDA system, and a pump tank are proposed. This treatment train may be modified for more desirable treatment processes prior to submitting construction plans. The following sections describe the process in more detail. The proposed system is shown in Attachment 4.

Biofiltro System

The treatment tank will serve to treat process wastewater flows using a Biofiltro BIDA system or an approved equal. Two (2) units will be required to treat the peak process wastewater flow of 1,666 gpd. Flow to this tank will be metered to ensure that the units are not overloaded.

HOLDING TANK AND DISPERSAL FIELD

To provide a preliminary estimate of the amount of storage tanks required, we have prepared a monthly water balance, as shown in Attachment 4. Monthly wastewater production is based on a percentage of the total annual wastewater production. The amount of water allowed to be applied is estimated by the typical vine water demand. The irrigation will be applied to areas of vineyards outside of the well setback requirements. An area of 1.08 acres of vineyard area and 0.25 acres of cover crop has been used to calculate the storage capacity required. Based on monthly analysis a maximum of 7,587 gallons of storage is required. The proposed 10,000 gallons of storage is sufficient for the winery.

During the summer months all of the treated wastewater will be used for irrigation. During the wet winter months, a limited discharge will be consistent with landscape water demand, and no discharge will occur within 48-hours of a forecasted rain event, and also for 48-hours after a rain event. These irrigation scheduling constraints necessitate installing a tank to store excess water that cannot be discharged during the winter months. All stored water will then be used for irrigation during the summer months.

OPERATION AND MAINTENANCE

The domestic and process wastewater systems will be fully automated and will be designed so minimal input from winery staff is required. Per Napa County guidelines, a Registered Civil Engineer, Registered Environmental Health Specialist, or Licensed Contractor will provide semi-annual monitoring and evaluation of the systems. The contract with the responsible party will be provided prior to the final inspection for the installed system.

CONCLUSION

This report demonstrates that the Winery at Mt. Veeder project can treat and disperse the proposed domestic and process wastewater onsite meeting the Napa County Environmental Management Design Standards for the treatment of domestic and process wastewater.

ATTACHMENT 1

VICINITY MAP
USGS MAP
SOILS MAP
FIRMETTE MAP

Winery at Mt. Veeder

County of Napa | ITS Dept

Printed On: 12/3/2021

0 0.05 0.1 0.2 mi

National Flood Hazard Layer FIRMette

FEMA

122°22'44"W 38°20'52"N

122°22'6"W 38°20'23"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

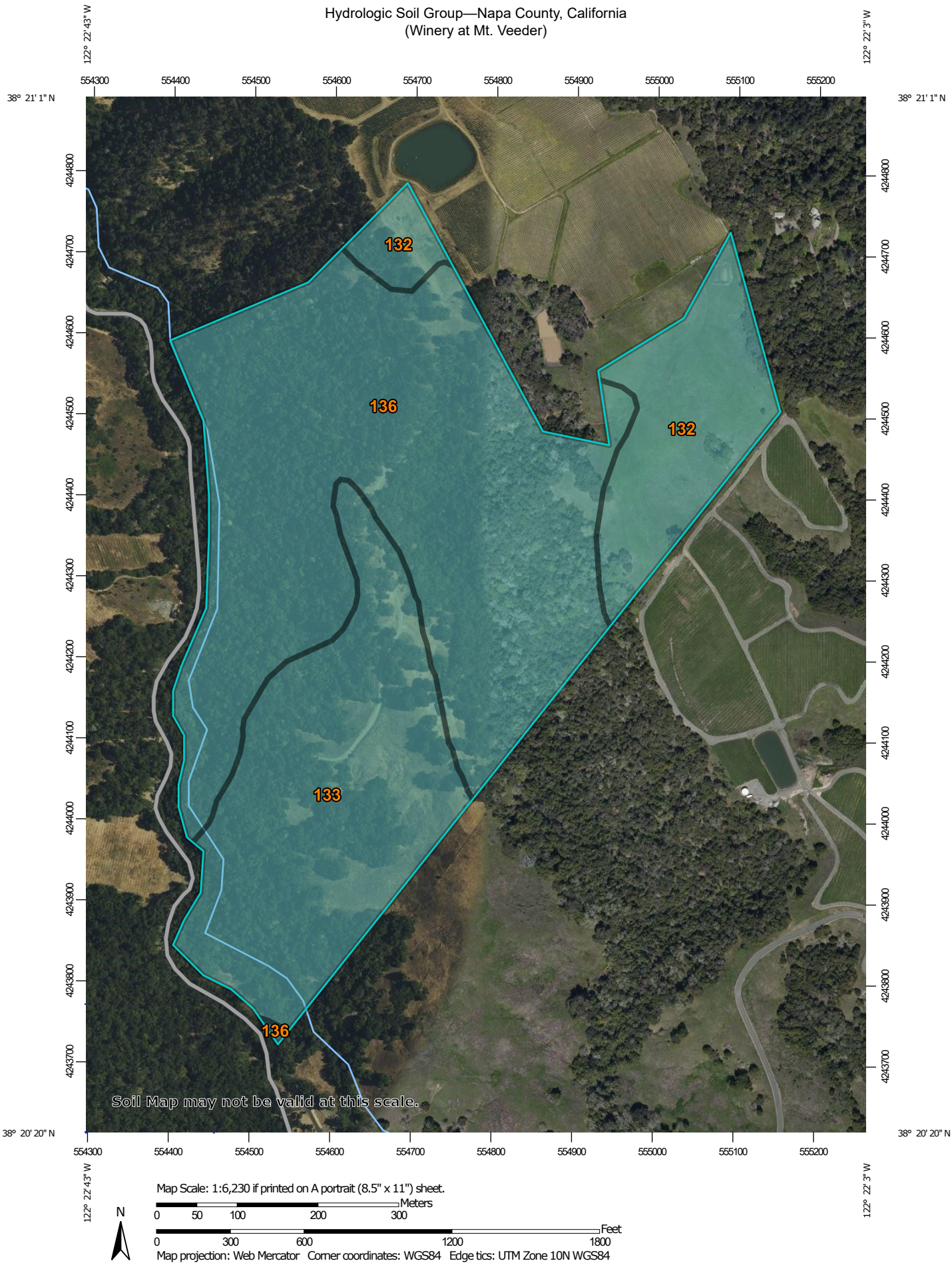
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/3/2021 at 6:42 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Hydrologic Soil Group—Napa County, California
(Winery at Mt. Veeder)



Map Scale: 1:6,230 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California
Survey Area Data: Version 14, Sep 9, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 15, 2019—Jul 5, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
132	Fagan clay loam, 15 to 30 percent slopes	C	15.5	15.2%
133	Fagan clay loam, 30 to 50 percent slopes	C	29.8	29.3%
136	Felton gravelly loam, 30 to 50 percent slopes	C	56.4	55.5%
Totals for Area of Interest			**101.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ATTACHMENT 2

SITE EVALUATION

RSA+ Project Number: 4121017.0

Napa County Department of Environmental Management

SITE EVALUATION REPORT

Please attach an 8.5" x 11" plot map showing the locations of all test pits triangulated from permanent landmarks or known property corners. The map must be drawn to scale and include a North arrow, surrounding geographic and topographic features, direction and % slope, distance to drainages, water bodies, potential areas for flooding, unstable landforms, existing or proposed roads, structures, utilities, domestic water supplies, wells, ponds, existing wastewater treatment systems and facilities.

Permit #: E12-00547
APN: 034-230-029
(County Use Only) Reviewed by: Date:

PLEASE PRINT OR TYPE ALL INFORMATION

Property Owner Gavin Sharrocks	☒ New Construction ☐ Addition ☐ Remodel ☐ Relocation ☐ Other:
Property Owner Mailing Address 1300 Mount Veeder Rd.	☐ Residential - # of Bedrooms: Design Flow : gpd
City: Napa State: CA Zip: 94558	☒ Commercial – Type: Winery Sanitary Waste: 400± gpd Process Waste: N/A gpd
Site Address/Location 1300 Mount Veeder Rd. Napa, CA 94558	☐ Other: Sanitary Waste: gpd Process Waste: gpd

Evaluation Conducted By:

Company Name RSA+	Evaluator's Name Margaret Schneider	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist)
Mailing Address: 1515 Fourth Street		Telephone Number 707-252-3301
City: Napa State: CA Zip: 94559		Date Evaluation Conducted 8/27/2021

Primary Area	Expansion Area
Acceptable Soil Depth: in. Test pit #'s: 3, 4, 6, 8, 9	Acceptable Soil Depth: Test pit #'s: 3, 4, 6, 8, 9
Soil Application Rate (gal. /sq. ft. /day): 0.2	Soil Application Rate (gal. /sq. ft. /day):
System Type(s) Recommended: Geoflow with pretreatment	System Type(s) Recommended:
Slope: 15% max Distance to nearest water source: >100 ft.	Slope: % Distance to nearest water source:
Hydrometer test performed? No ☒ Yes ☐ (attach results)	Hydrometer test performed? No ☒ Yes ☐ (attach results)
Bulk Density test performed? No ☒ Yes ☐ (attach results)	Bulk Density test performed? No ☒ Yes ☐ (attach results)
Percolation test performed? No ☒ Yes ☐ (attach results)	Percolation test performed? No ☒ Yes ☐ (attach results)
Groundwater Monitoring Performed? No ☒ Yes ☐ (attach results)	Groundwater Monitoring Performed? No ☒ Yes ☐ (attach results)

Site constraints/Recommendations:

4 pits were deemed acceptable to a minimum of 24". These pit locations will require 6" of fill soil upon system install. The proposed system is being proposed as part of a winery development project and will only serve winery domestic needs. A separate process wastewater system is being proposed for treated wastewater disposal to vineyard irrigation.

RSA+ Project Number: 4121017.0

Test Pit # 1

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-26	C	>50%	CL	MSB	H	VF	NS	FF	N/A	N/A

Test Pit # 2

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-18	C	>30%	CL	MSB	SH/ H	F/FR B	NS	FF	N/A	N/A
18-24	C	>50%								

Test Pit # 3

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-24	C	30%	CL	MSB	SH/ H	F/FR B	NS	FF	FM	N/A
24-46	C	>50%								

RSA+ Project Number: 4121017.0

Test Pit # 4

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-25	C	40%	CL	MSB	SH	F/FR B	NS	FF	FM	N/A
25-38	C	>50%								

Test Pit # 5

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-30	C	>50	CL	MSB	H	VF	NS	FF	N/A	N/A

Test Pit # 6

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-24	C	>30%	CL	MSB	SH	F/FR B	NS	FF	FM	N/A
24-32	C	>50%								

RSA+ Project Number: 4121017.0

Test Pit # 7

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-15	C	40%	CL	MSB	SH	F/FR B	NS	FF	FF	N/A
15-36		>50%								

Test Pit # 8

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-24	C	30%	CL	MSB	SH	F/FR B	NS	FF	FM	N/A
24-39	C	>50%	C	MSB						

Test Pit # 9

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-24	C	40%	CL	MSB	SH	F-FRB	NS	FF	FM	N/A
24-43	C	>50%								

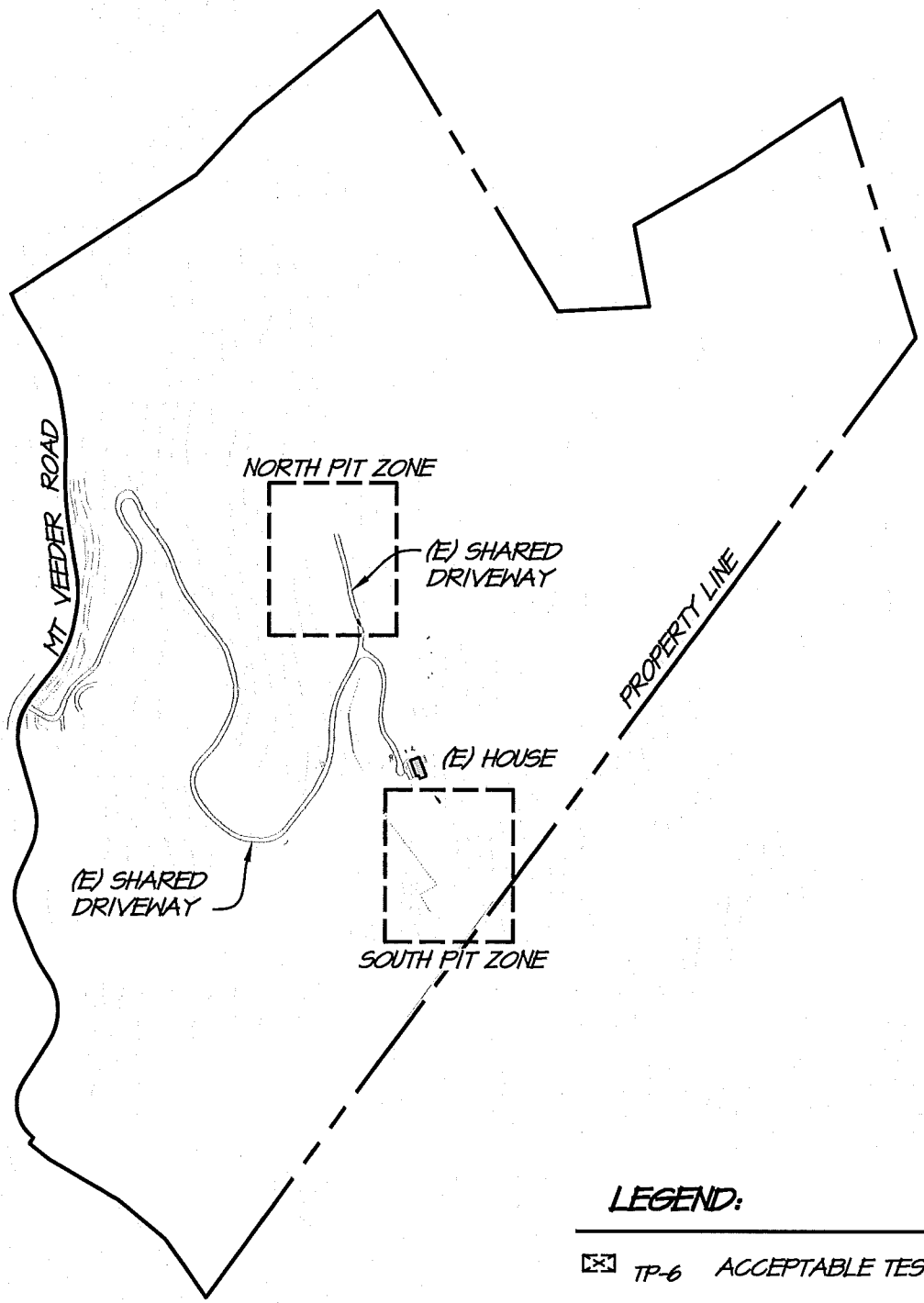
RSA+ Project Number: 4121017.0

Test Pit # 10

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
					Side Wall	Ped	Wet			
0-20	C	40%	CL	MSB	SH	F/FR B	NS	FF	MM	N/A
20-40	C	>50%								

P & M VINEYARD HOLDING
P I T M A P

NAPA COUNTY CALIFORNIA



LEGEND:

TP-6 ACCEPTABLE TEST PIT LOCATION

TP-7 UNACCEPTABLE TEST PIT LOCATION

SITE PLAN

SCALE: 1" = 50'

GRAPHIC SCALE

500 0 500

(IN FEET)

1 Inch = 500 FT

RSA+

1515 FOURTH STREET
NAPA, CALIF. 94559
OFFICE|707|252.3301
+ www.RSAcivil.com +

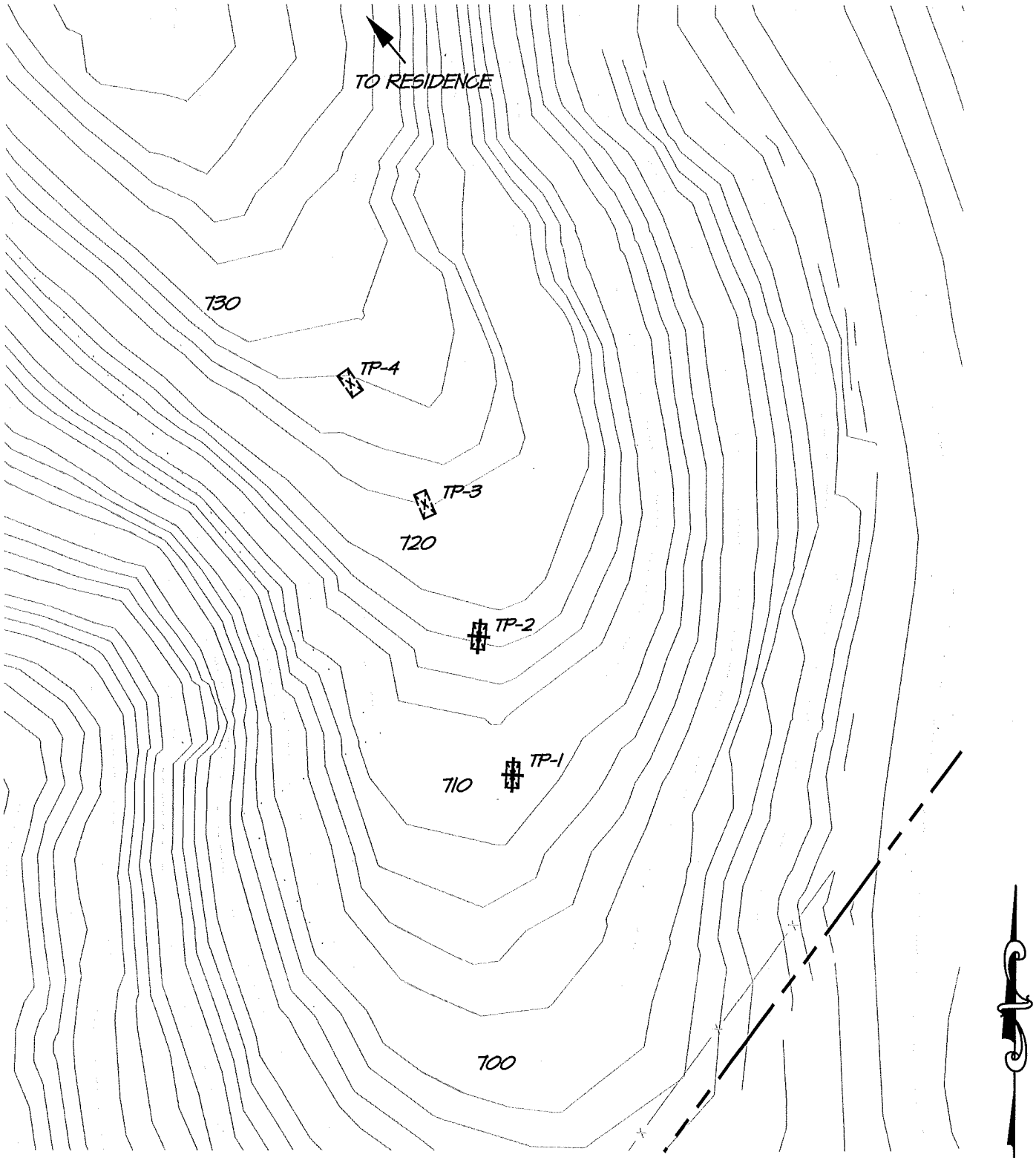
RSA+| CONSULTING CIVIL ENGINEERS + SURVEYORS + | est. 1980

SEPT 15, 2021 4121017.0 Exh Pit Map

P & M VINEYARD HOLDING

P I T M A P

NAPA COUNTY CALIFORNIA



SOUTH PIT ZONE

SCALE: 1" = 50'

GRAPHIC SCALE

50 0 50

(IN FEET)
1 Inch = 50 FT

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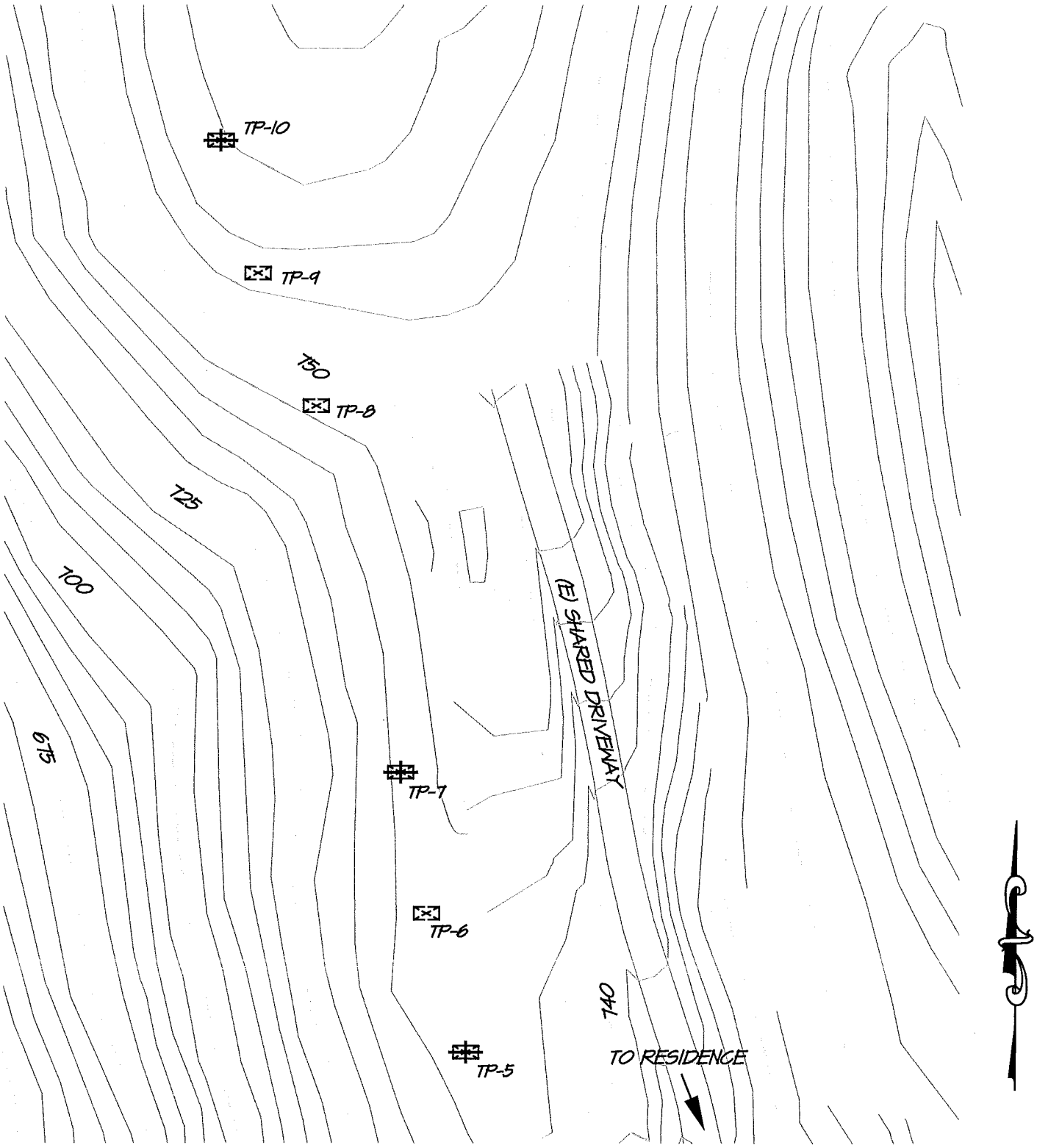
SEPT 15, 2021 4121017.0 Exh Plt Map

P & M VINEYARD HOLDING

P I T M A P

NAPA COUNTY CALIFORNIA



NORTH PIT ZONE

SCALE: 1" = 50'

GRAPHIC SCALE

50 0 50

(IN FEET)

1 Inch = 50 FT

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SEPT 15, 2021 4121017.0 Exh Plt Map

ATTACHMENT 3

BIOFILTRO SYSTEM INFORMATION

BIOFILTRO
worm powered wastewater solutions

Take Control of Your Wastewater

Our **Control Unit** is the brain and headworks of our modular systems. We pack all the components specific to your needs into this unit and deliver a system that is operable not only within hours of delivery, but also from your cellphone, tablet, or computer.

Housed in a 10'L x 8' W x 8' H shipping container, the standard unit includes an equalization tank, flow meter, sensors and probes, recirculation, pump station, and PLC. Optional features includes solid separator(s), pH adjustment system, and climate control equipment. One control unit can support up to 4,000 GPD, larger volumes may require additional/larger equalization tank(s). The unit can run off of generators and/or solar panels to service areas that are off of the grid. Exterior paint and branding can also be customized.

INSTALLATION REQUIREMENTS	
Operating Weight	6,000 lbs
Electrical Supply	240V Three Phase
Earthwork	90% Compaction 4" Gravel Pad 0% Slope
Amp Draw	50

BIOFILTRO

worm powered wastewater solutions

Part	STANDARD EQUIPMENT
A	≤1,000 Gallon Equalization Tank
B	Two Pumps
C	Venturi Mazzei & Injectors
D	pH, ORP, and Temperature Probes
E	Programmable Logic Controller (PLC)
F	Camera
G	Overhead light and ventilation fan
I	Flow Meter

Part	OPTIONAL EQUIPMENT
J	Solid Separator
K	pH Adjustment System
	Climate Control Equipment
	Insulated Walls
	Power Generator
	Solar Panels

1949 5th Street, Suite 101, Davis, CA 95616 **Tel**: 530 302 5692
www.biofiltro.com info@biofiltro.com

BIOFILTRO

worm powered wastewater solutions

A Whole New Can Of Worms

Ideal for sanitary, food & beverage, and livestock wastewater

Our **Can of Worms** is a compact stand alone wastewater package system housed in a 20' shipping container. With a maximum treatment capacity up to 1,000 gallons per day, this system is ideal for rural sanitary needs, boutique processors, and/or for research.

The Can of Worms comes with its own solid separator, equalization tank, lift station, PLC, monitoring camera. If necessary, the system can be upgraded to include a pH adjustment system, climate control equipment, and/or tertiary disinfection.

Our units are designed and built in California and take 4 - 6 weeks to deliver. They are available to purchase or can be financed through our Wastewater as a Service model.

Treatment Process	Continuous Batch
Treatment Time	4 Hours
Operating Weight	12,000 lbs
Operating Dimensions	20' L x 8' W x 8' H
Sitework	90% Compaction, 4" Gravel Pad; 2-3% Slope

Take Control of Your Wastewater

- Energy Efficient
- Mobile & Scalable
- Turn Key Installation
- Remotely Monitored
- Beneficial Byproducts
- Self Contained

Our systems come equipped with Nightcrawler, our very own monitoring software. Accessible from tablets, cell phones, and desktops, Nightcrawler enables users to execute basic operational and troubleshooting functions while logging water usage and influent and effluent water quality data. Customers can also leverage this software to reduce their water usage and increase their sustainability metrics.

Should the customer's flow, water quality, or discharge permit change and thereby require additional treatment, additional Cans of Worms and or tertiary treatment systems can be snapped on to keep the system within compliance.

Removal Efficiencies	
BOD5	85 - 99%
TSS	85 - 99%
TKN	60 - 95%
Ammonia	65 - 85%
Phosphorus	35 - 70%

TREATMENT CAPACITY	
Influent BOD5 mg/L	Gallons Per Day
0 - ≤ 500	≤ 1,500
500 - ≤ 1,000	≤ 1,125
1,000 - ≤ 6,000	≤ 450
6,000	≤ 225

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ATTACHMENT 4

Treated Process Wastewater Irrigation Water Balance
Vineyard Area to Receive Treated Process Wastewater Irrigation

Reclaimed Process Wastewater
Water Balance for Irrigation and Storage

Project Description		Annual Process Waste Flow Volume		
Project Number:	4121017.0	Wine Production:	25,000	gal/year
Project Name:	Mt Veeder Winery			
Prepared By:	MSS	Annual Process Waste per Gallon Wine:	5	gal/year
Date:	March 16th, 2022	Total Annual Process Waste Generated:	125,000	gal/year

Vineyard Irrigation Parameters		Landscape Irrigation Parameters		
Acres of irrigated vineyard:	1.08 acres	Crop type / name:	Cover Crop	
Row spacing:	8.0 feet	Total irrigated acres of crop:	0.25 acres	
Vine spacing:	8.0 feet			
Total number of vines:	735 vines			
Water use per vine per month (peak):	26 gal			
Total peak monthly irrigation demand:	19,112 gal			

Monthly Process Wastewater Generation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly process wastewater generated as % of annual total:	4%	6%	6%	5%	6%	7%	9%	10%	14%	14%	11%	8%
Monthly process wastewater generated [gallons]:	5,000	7,500	7,500	6,250	7,500	8,750	11,250	12,500	17,500	17,500	13,750	10,000

Monthly Vineyard Irrigation Water Use

(Based on per-vine water use)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beginning of month reclaimed water in storage [gallons] (This number brought forward from end of previous month)	7,587	6,064	5,086	0	0	0	0	0	0	0	0	4,752
Vineyard irrigation as % of peak month irrigation demand:	6%	6%	10%	100%	100%	100%	100%	100%	100%	100%	10%	10%
Irrigation per month per vine (gallons):	1.6	1.6	2.6	26.0	26.0	26.0	26.0	26.0	26.0	26.0	2.6	2.6
Total vineyard irrigation demand [gallons]:	1,147	1,147	1,911	19,112	19,112	19,112	19,112	19,112	19,112	19,112	1,911	1,911
Will vineyard be irrigated with reclaimed water this month?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Process wastewater generated this month, reclaimed for vineyard irrigation [gallons]	1,147	1,147	1,911	6,250	7,500	8,750	11,250	12,500	17,500	17,500	1,911	1,911
Remaining vineyard irrigation demand after using this month's process water [gallons]	0	0	0	12,862	11,612	10,362	7,862	6,612	1,612	1,612	0	0
Drawdown from storage for remaining vineyard irrigation [gallons]	0	0	0	0	0	0	0	0	0	0	0	0
Well water required to satisfy remaining vineyard irrigation demand	0	0	0	12,862	11,612	10,362	7,862	6,612	1,612	1,612	0	0
Net storage after vineyard irrigation drawdown [gallons]	7,587	6,064	5,086	0	0	0	0	0	0	0	0	4,752
This month's process wastewater, remaining after vineyard irrigation, available for landscape irrigation[gallons]	3,853	6,353	5,589	0	0	0	0	0	0	0	11,839	8,089

Water balance continues on next page for cover crop irrigation.

Monthly Landscape Irrigation Water Use

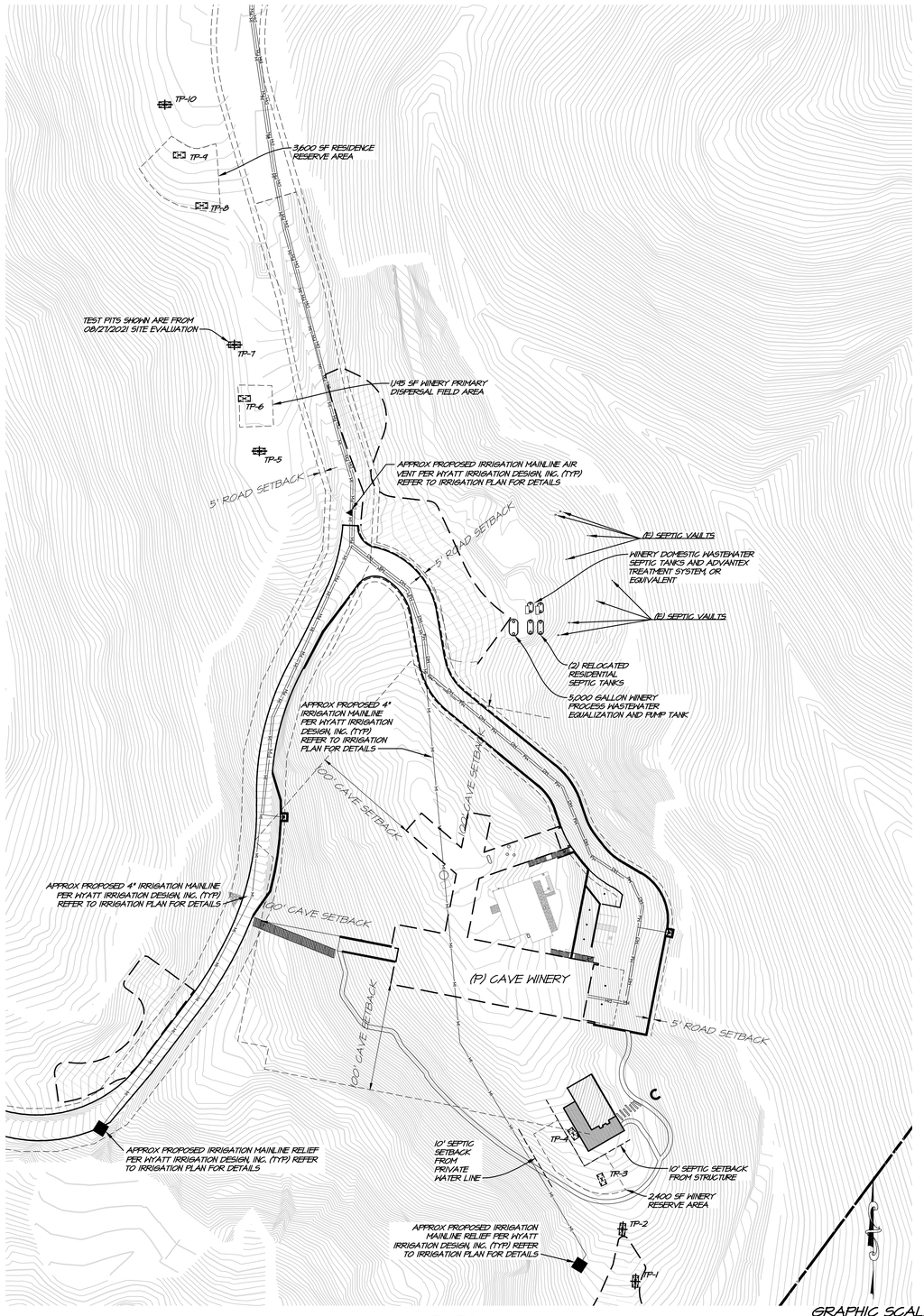
(Based on evapotranspiration crop demand and irrigated area)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
This month's process wastewater, remaining after vineyard irrigation, available for landscape irrigation[gallons] *(From sheet 1)*	3,853	6,353	5,589	0	0	0	0	0	0	0	11,839	8,089
Reference ET (ETo) (in/month) (see note 1)	1.32	1.8	3.32	4.78	6.11	6.84	7.07	6.3	4.9	3.45	1.74	1.29
Crop Coefficient (k_c) (see note 2)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Crop water demand per acre [inches]	0.79	1.08	1.99	2.87	3.67	4.10	4.24	3.78	2.94	2.07	1.04	0.77
Crop water demand per acre [gallons]	21,505	29,325	54,088	77,873	99,541	111,433	115,180	102,636	79,828	56,205	28,347	21,016
Total crop water demand for irrigated area [gallons]	5,376	7,331	13,522	19,468	24,885	27,858	28,795	25,659	19,957	14,051	7,087	5,254
Will landscape be irrigated with reclaimed water this month?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Process wastewater remaining after vineyard irrigation, reclaimed for landscape irrigation [gallons]	3,853	6,353	5,589	0	0	0	0	0	0	0	7,087	5,254
Landscape irrigation water required from storage or other source [gallons]	1,523	978	7,933	19,468	24,885	27,858	28,795	25,659	19,957	14,051	0	0
Drawdown from storage for landscape irrigation [gallons]	1,523	978	5,086	0	0	0	0	0	0	0	0	0
Process wastewater generated this month, unused for irrigation, to be reclaimed and stored [gallons]	0	0	0	0	0	0	0	0	0	0	4,752	2,835
Net end-of-month reclaimed water storage after all irrigation [gallons]	6,064	5,086	0	0	0	0	0	0	0	0	4,752	7,587

End of Water Balance

Peak Monthly Storage = **7,587 gallons**

Notes:

1. Reference ETo from California Irrigation Management Information System
2. Crop Coefficient from Table 1 of "Estimating Irrigation Water Needs of Landscape Plantings in California", University of California Cooperative Extension, August 2000.



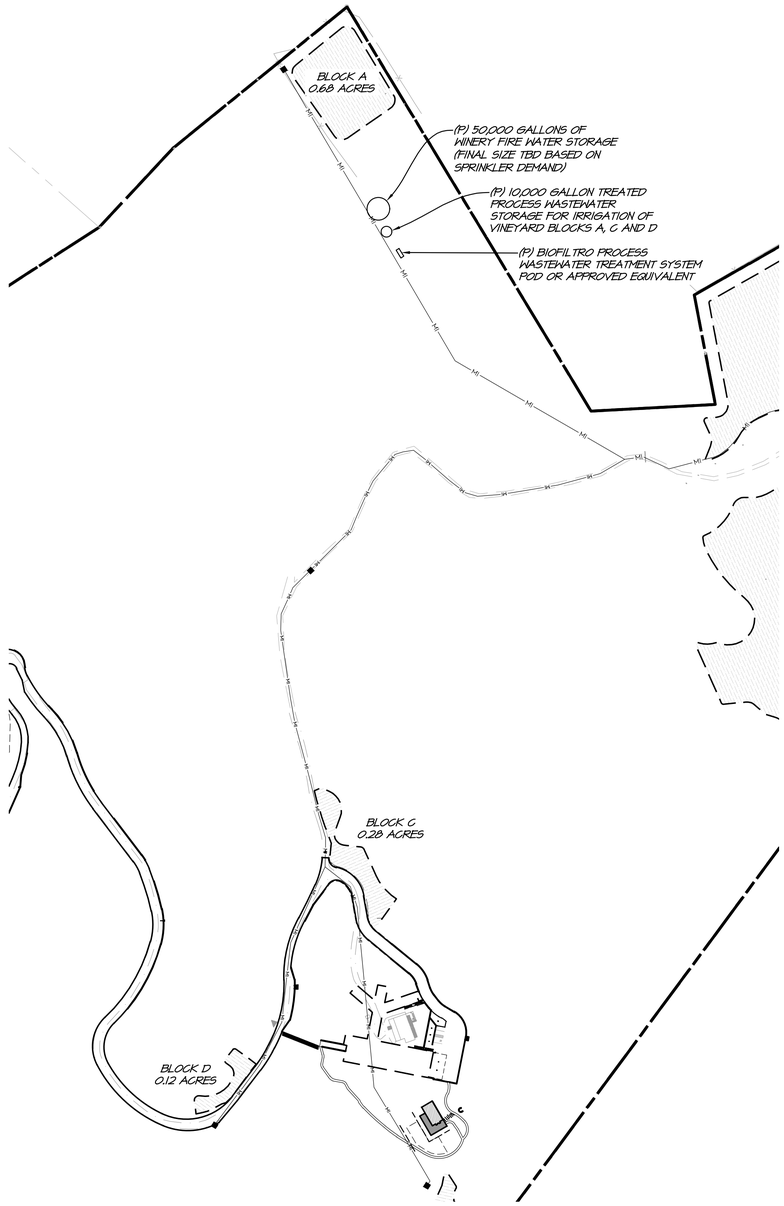
UTILITY

SCALE: 1" = 60'

GRAPHIC SCALE

60 0 60 120

(IN FEET)
1 inch = 60 FT



PROCESS WASTEWATER IRRIGATION AREAS

SCALE: 1" = 150'

GRAPHIC SCALE

150 0 150 300

(IN FEET)
1 inch = 150 FT

NO.	DATE	REVISIONS	BY	APPD

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THE WINERY AT MT. VEEDER
UTILITY

NAPA COUNTY CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER BRUCE WILLIAM FOSTON No. 77859 Exp. 6-30-23 CIVIL ENGINEER STATE OF CALIFORNIA

DATE	MARCH 14, 2022	
DRAWN	JFH	
DESIGNED	MSS	
CHECKED	BWF	
JOB NO.	4121017.0	

SHEET NO.
UP4.0
6 OF 12 SHEETS

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PRELIMINARY - NOT FOR CONSTRUCTION