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Wastewater Feasibility Study

Beaulieu Vineyards P17-00192-MOD
Planning Commission Hearing June 6, 2018

WASTEWATER FEASIBILITY STUDY

Beaulieu Vineyards

Napa, California
APN 030-110-019

SUMMIT

CIVIL STRUCTURAL ELECTRICAL WATER|WASTEWATER

Project No. 2017017
September, 2017

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BEAULIEU VINEYARDS
Napa, California
WASTEWATER SYSTEM FEASIBILITY

PROJECT OVERVIEW

Beaulieu Vineyards is proposing to increase employees, visitation and marketing events, with no change to annual wine production capacity from the currently permitted 1,800,000 gallons per year. To accommodate the proposed changes, it is feasible to expand and upgrade the facility's existing sanitary sewage (SS) management system, with no changes required to the process wastewater (PW) management system. The SS management system will be improved to accommodate additional SS flow from visitation and employees. This wastewater feasibility study details the proposed changes to the SS management system.

SITE DESCRIPTION

The facility is located east of Highway 29 and north of highway 128/Rutherford Road in an agricultural and commercial area with vineyards to the north, east, and west and residential and commercial facilities to the south. The site topography slopes gradually downward to the east towards the Napa River. Surface drainage flows overland to the east. The facility has been operated as a winery since at least the early 1970s. No distillation occurs at the facility. An overall site plan for the facility is provided in Enclosure A.

SITE EVALUATION RESULTS

A site evaluation was performed by Summit Engineering and Napa County Registered Environmental Health Specialist (REHS) Armeda Van Dam on February 15, 2017, and with Napa County REHS Maureen Shields on March 16, 2017. Ten soil profiles were excavated (TP-1A through TP-10A) adjacent to the existing leachfield and within the vineyard block on the adjacent vineyard parcel (APN: 030-110-028) north east of the winery on 2/15/17. Nine soil profiles were excavated (TP-1B through TP-9B) within the footprint of the existing leachfield on 3/16/17. Please refer to the attached site map for the soil profile locations. The soil profiles in the vicinity of the proposed disposal area displayed acceptable soil to a depth of 36 inches. These soils were classified as sandy clay loam by hand texturing analysis with weak to moderate sub-angular blocky structure. Buoyoucos hydrometer testing was conducted on two samples taken from soil profiles TP-1 and TP-5, and were classified as sandy loam and sand respectively. The corresponding hydraulic loading rates for subangular blocky, weak to moderate structure sandy loam of 0.5 gpd/sf for septic tank effluent (STE), utilizing pretreatment for 1 foot of soil credit.. See Enclosure C for the Site Evaluation Report.

WINERY PROCESS WASTEWATER MANAGEMENT SYSTEM

No changes are proposed to the existing PW management system, as the facility is not proposing any increase to the permitted wine production capacity.

SANITARY SEWAGE MANAGEMENT SYSTEM

Beaulieu Vineyards intends to improve their sanitary sewage (SS) wastewater management system in accordance with all necessary Napa County Planning, Building, and Environmental Services (PBES) and Regional

Water Quality Control Board criteria and permits (if required). SS flows will be handled separately from the PW flows.

The SS management system currently includes an existing SS collection system, septic tank, and a total of approximately 1,700 linear feet (LF) of standard leach lines. The existing leach field was installed in 1975, and the condition of the existing system has been assessed and field located by a qualified septic contractor. Although the existing leach field is in adequate condition for continued disposal of SS, the leach field will be repurposed as a subsurface dripfield with pretreatment. Subsurface drip tubing will be installed with minimum 1 foot setbacks to existing leachline trenches, with 6" of acceptable soil above the drip tube and a minimum 24" below the drip tube to the limiting soil condition. To accommodate the increase in number of employees and visitors, additional septic tankage, pretreatment via recirculation and filtration through textile filter pods, and a dosing pump tank will also be added. The proposed SS management system improvements will be sized for a peak daily SS flow of approximately 4,980 gal/day.

SANITARY SEWAGE CHARACTERISTICS

SS will consist primarily of wastewater generated from restrooms, laboratories, and tasting room facilities. No PW will be discharged into the SS management system. Typical SS characteristics are as summarized below:

Characteristic	Units	Raw Wastewater[1] Range
BOD_s	mg/L	110 - 220
Grease	mg/L	50-100
Total Suspended Solids (TSS)	mg/L	100 - 220
Volatile Suspended Solids	mg/L	80 - 165
Total Dissolved Solids (TDS)	mg/L	250 - 500
Nitrogen	mg/L	20 - 40
Nitrate	mg/L	0
Phosphorous	mg/L	4 - 8
Alkalinity ($CaCO_3$)	mg/L	50 - 100
Chloride	mg/L	30 - 50
Sulfate	mg/L	20 - 30

[1]Typical composition of untreated domestic wastewater, Metcalf & Eddy, "Wastewater Engineering, Third Edition", 1991

WINERY SANITARY SEWAGE DESIGN FLOWS

It is proposed to have food pairing available for tasting visitors, and SS flows associated with a potential cheese and charcuterie plate that would be brought in and plated for food pairing, is included below. All SS generated from marketing events will be managed using the onsite SS management system. The estimated peak day harvest flows are provided below. Average daily flows for each month are provided in Enclosure B.

Average Day with tasting and Without Event							
Employee (full-time)	105	x	15	gpcd	=	1,575	gal/day
Employee (part-time)	35	x	15	gpcd	=	525	gal/day
Tasting Visitors	550	x	3	gpcd	=	1,650	gal/day
Tasting Visitors Food Pairing[1]	138	x	0.75	gpcd	=	104	gal/day
Total					=	3,854	gal/day
					=	**3,860**	**gal/day**
Peak Tasting Day with Event							
Employee (full-time)	105	x	15	gpcd	=	1,575	gal/day
Employee (part-time)	35	x	15	gpcd	=	525	gal/day
Tasting Visitors	550	x	3	gpcd	=	1,650	gal/day
Tasting Visitors Food Pairing[1]	138	x	0.75	gpcd	=	104	gal/day
Largest Open House Event	75	x	15	gpcd	=	1,125	gal/day
Total					=	4,979	gal/day
					=	**4,980**	**gal/day**

1) Food pairing assumed for 25% of tasting visitors
2) All meals are to be prepared in the commercial kitchen onsite, and portable toilets will be required for any special events with more than 75 guests. Multiple private/large events will not occur on the same day

The SS management system will be designed to handle the peak daily SS flow of 4,980 gal/day and an average daily SS flow of 3,860 gal/day.

KITCHEN SS DESIGN FLOWS

For promotional tasting events where meals are prepared onsite (75 guests maximum), a generation rate of 5 gallons per meal is assumed. Therefore, the maximum flow associated with meal preparation is calculated as follows:

$$75\ meals \times \frac{5\ gal\ WW}{1\ meal} = 375\ gallons$$

An SS flow of 3,000 gallons will be used to size the kitchen grease interceptor.

WINERY SANITARY SEWAGE CONVEYANCE, TREATMENT AND DISPOSAL

The proposed winery SS treatment and disposal system improvements will have the components described below. Refer to Enclosure A for the SS management system schematic and Overall Site Plan.

1) Gravity Collection System – Designed to provide low maintenance and no infiltration or exfiltration. Piping is compatible with sanitary wastewater and satisfies Uniform Plumbing Code and local requirements.
2) Grease Interceptor – The maximum flow generated by the kitchen is projected to be 375 gpd. The grease interceptor shall be sized to provide 3 days of retention, based on Orenco's commercial design guidelines. A minimum of 1,125 gallons is required, so a 1,500 gallon grease interceptor will be installed to provide the recommended 3-day retention for peak events.
3) Septic Tanks with Effluent Filter – The required septic tank size for the increased winery SS flows was determined by evaluating sizing recommendations based on the Uniform Plumbing Code (UPC) formula and Orenco's commercial SS recommendation for a 3 day retention time, as shown below:

   Uniform Plumbing Code Method:

   $$Volume = 1{,}125 + 0.75 \times Flow\ Rate$$
   $$Volume = 1{,}125 + 0.75 \times 4{,}980\ gpd$$
   $$Volume = 4{,}860\ gallons$$

   3 Day Retention Time Method:

   $$Volume = 4{,}860\ gpd \times 3\ days = 14{,}580\ gallons$$

   The existing 6,000 gallon septic tank will not provide adequate tankage when sized per the UPC requirements, or Orenco's commercial SS design guidelines. The more conservative method based on Orenco's guidelines will be used to select a total septic tank volume of approximately 15,000 gallons for solids removal prior to pre-treatment. An additional 9,000 gallons of septic tankage (either two 5,000 gallon concrete tanks in series or a single 9,000 gallon fiberglass reinforced polyester tank) will be installed.

   Removal of solids in the septic tank helps to reduce BOD loads on the system and minimize the frequency of sludge removal in aerobic systems. An effluent filter will also be provided on the outlet of the final septic tank to remove additional suspended solids which do not settle out in the tank.
4) AdvanTex Textile Filter Pre-treatment System – Orenco System's AdvanTex Treatment System is a packed bed textile filter that supports attached growth biological treatment. Package treatment systems have been widely utilized for sanitary sewage treatment and have been successful in providing consistent reliable treatment when properly designed and operated. The facility will utilize one AdvanTex AX-MAX 275 recirculation and treatment system to accommodate the flows from the increased number of employees and visitation.
5) Recirculation Tank – The AX-MAX 275 will include the necessary recirculation tank volume and pumping components for pretreatment of a peak day flow of 4,980 gpd. The recirculation/blending tank will be

provided for dilution and buffering of peak hydraulic and organic loads. A duplex pumping system will be installed as part of the recirculation/blending tank to dose the AdvanTex AX-MAX 275 filter media.

6) Dosing pump tank – Effluent from the AdvanTex filter media in the AX-MAX 275 will flow by gravity to the dosing tank compartment, where it will be time dosed to the subsurface drip field.
7) Flow measurement – Inline magnetic flow measurement devices will be provided to measure flows from the dosing tank compartment to the drip field, and also to measure return flush flow from the drip field back to the septic tank inlet.
8) Subsurface Drip Disposal – The subsurface drip disposal field will provide for effluent disposal. The drip tubing, manufactured by Geoflow, will be installed in 6 inch deep trenches in between the existing perforated leach lines to be abandoned in place. A 1 foot setback will be enforced adjacent to the existing gravel leachfield trenches to prevent infiltration of effluent into the existing trenches. Installation of the drip tubing near the soil surface will maximize the evaporation and percolation into the root zone of the soil. The area for subsurface drip disposal will be approximately 9,960 square feet (SF) or 4,980 LF of drip tube. A 200% reserve area of at least 20,000 SF, located in the adjacent vineyards, will be protected from future development as well.

The existing leachline pipes are spaced alternately 12 feet and 15 feet apart, and are approximately 205 feet long. The condition assessment performed on the existing leachfield in Enclosure A includes an as-built drawing for reference. The existing gravel trenches are 18 inches wide, so with 12 foot trench spacing, 1 foot setback from the trench, and 2 feet between each drip line, 4 drip lines should fit between each existing leach line pipe while satisfying all constraints. Likewise, with 15 foot trench spacing, 5 drip lines will fit while maintaining the same constraints. The available disposal area, taking into account the spaces between 9 existing leach line pipes and available disposal area to the south, is therefore:

$$= 205\ ft\ long\ \times \left(4\ \frac{drip\ lines}{existing\ leach\ pipe}\ \times 6\ leach\ pipes\ on\ 12'spacing\right)$$
$$+ 205\ ft\ long\ \times \left(5\ \frac{drip\ lines}{existing\ leach\ pipe}\ \times 2\ leach\ pipes\ on\ 15'spacing\right)$$
$$+ 205\ ft\ long\ \times (8\ drip\ lines\ to\ the\ south\ of\ the\ existing\ leachfield)$$
$$= 8{,}610\ LF\ total\ drip\ line\ capacity$$

The required drip line length of 4,980 LF will fit within the footprint of the existing leach field, with room for effluent feed and flush return piping.

OTHER CONSIDERATIONS

ODOR CONTROL

There should be no noxious odors from a properly designed and operated treatment system. See Alternative Courses of Action for operation alternatives.

GROUND WATER CONTAMINATION

The nearest existing or proposed water well to the SS treatment and disposal systems is approximately 300 feet. No disposal of wastewater effluent will occur within 150 feet of any existing or proposed wells.

PROTECTION

Exposed wastewater treatment facilities should be posted with appropriate warning signs. The treatment areas will be protected to restrict access and potential damage to the system.

ALTERNATIVE COURSES OF ACTION

For the SS management system, should there be any unforeseen operational difficulties, the following additional courses of action would be available if necessary:

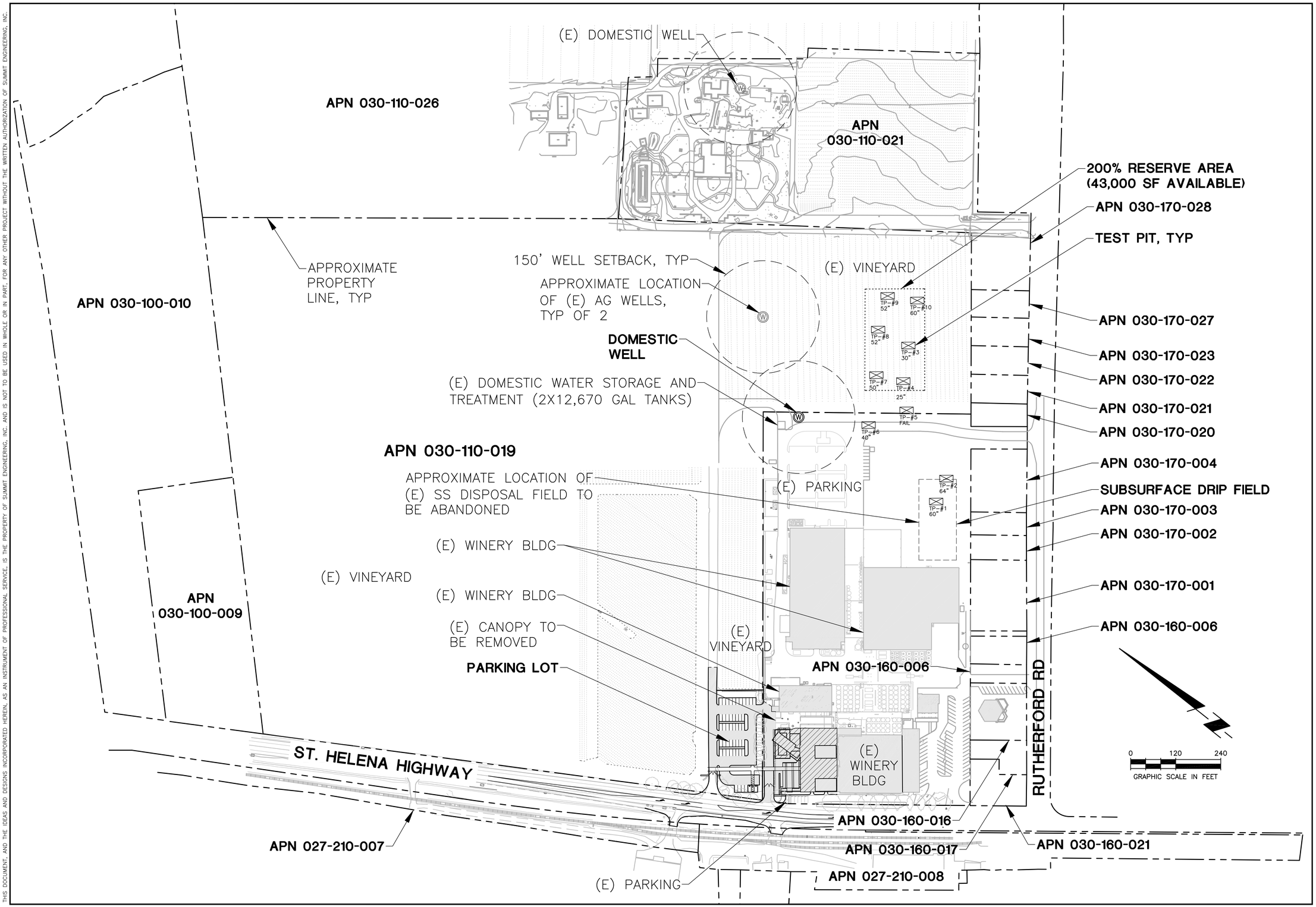
- Pumping and truck transfer of treated and diluted wastewater to an approved treatment plant or land disposal site would be used as additional courses of action
- Primary or reserve area expansion to accommodate additional SS disposal
- Additional treatment of SS for land disposal

ENCLOSURE A

OVERALL SITE PLAN

WASTEWATER MANAGEMENT SYSTEM SCHEMATIC

THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF SUMMIT ENGINEERING, INC. AND IS NOT TO BE USED IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF SUMMIT ENGINEERING, INC.



SUMMIT

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707-527-0775 • www.summit-sr.com

BEAULIEU VINEYARDS
1960 ST. HELENA HIGHWAY
RUTHERFORD, CA 94558
APN 030-110-019

USE PERMIT APPLICATION

WATER & WASTEWATER SITE PLAN

	2017-09-15 USE PERMIT SUBMITTAL

DATE:	2017-04-17
JOB NO:	2017017
SCALE:	AS SHOWN
DRAWN:	JA
CHECKED:	CP

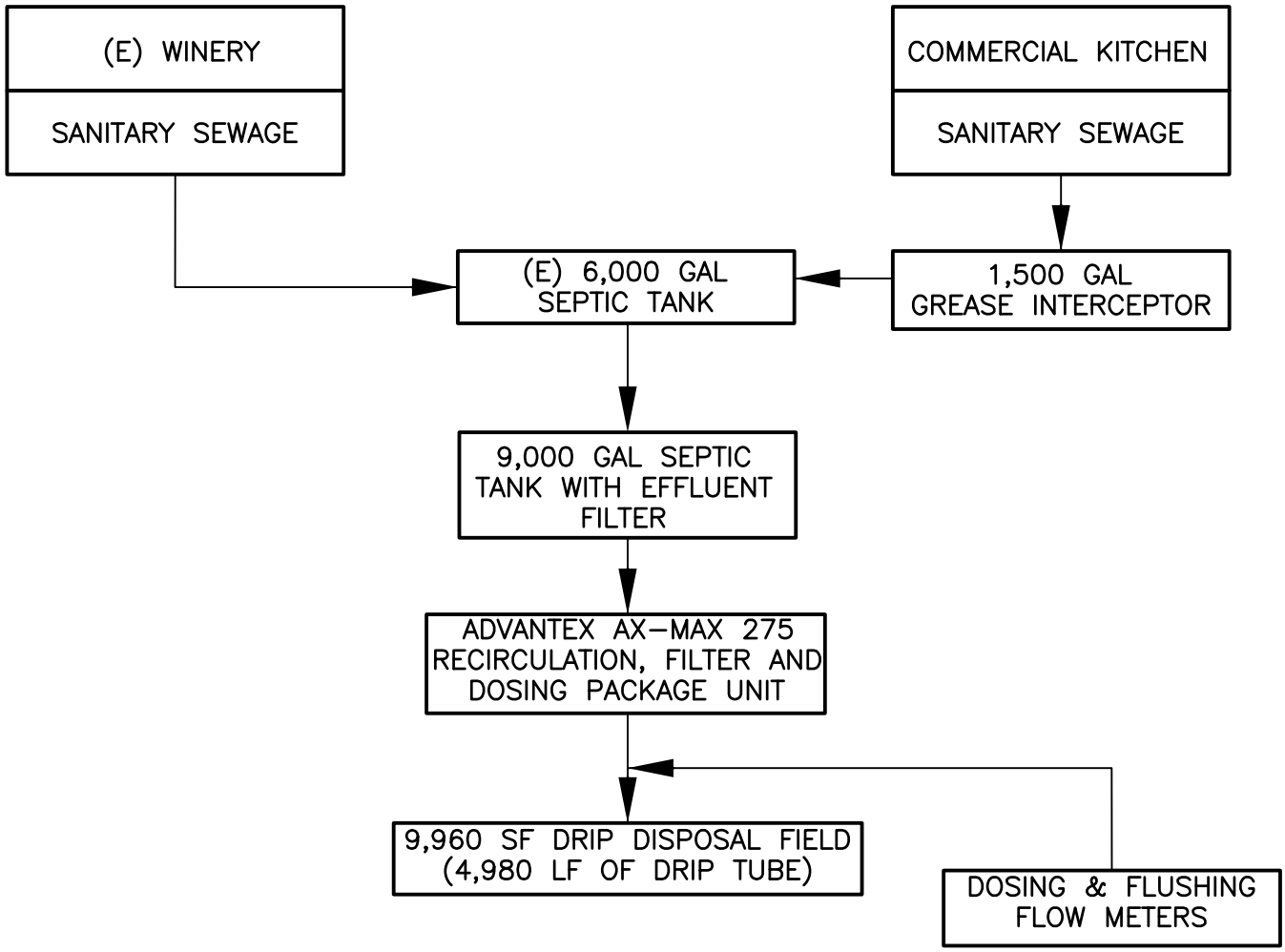
SHEET **UP4**

SUMMIT

BEAULIEU VINEYARDS
1960 ST. HELENA HIGHWAY
NAPA, CA
APN 030-110-019

SANITARY SEWAGE FLOW SCHEMATIC

PROJECT NO. 2017017
DATE 2017-09-08
SHT NO 1 OF 1
BY SW CHK GG



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ENCLOSURE B

SS MANAGEMENT SYSTEM DESIGN CALCULATIONS

SUMMIT ENGINEERING, INC.	BEAULIEU VINEYARDS Wastewater Feasibility Study Existing Sanitary Sewage Flows	PROJECT NO. 2017017 BY: SW CHK: GG

SANITARY SEWAGE

Average Day w/o Event - Non-harvest						Notes
Employee (full-time)	86	x 15 gpcd	=	1,290	gal/day	
Employee (part-time)	86	x 15 gpcd	=	1,290	gal/day	
Tasting Visitors	450	x 3 gpcd	=	1,350	gal/day	Peak visitation assumed (3,150 visitors/week)
Tasting Visitors food pairing	0	x 0.75 gpcd	=	0	gal/day	No food pairing with existing visitation
Total			=	3,930	gal/day	
			=	***3,930***	***gal/day***	

Peak Tasting Day Harvest						
Employee (full-time)	86	x 15 gpcd	=	1,290	gal/day	
Employee (part-time)	86	x 15 gpcd	=	1,290	gal/day	
Tasting Visitors	450	x 3 gpcd	=	1,350	gal/day	Peak visitation assumed (3,150 visitors/week)
Tasting Visitors food pairing	0	x 0.75 gpcd	=	0	gal/day	No food pairing with existing visitation
Promo Tasting w/ Meal	0	x 15 gpcd	=	0	gal/day	Offsite meal prep assumed
Total			=	3,930	gal/day	
			=	***3,930***	***gal/day***	

DESIGN FLOW = **3,930 gal/day**

SUMMIT ENGINEERING, INC.	BEAULIEU VINEYARDS Wastewater Feasibility Study Proposed Sanitary Sewage Flows	PROJECT NO. 2017017 BY: SW CHK: GG

SANITARY SEWAGE

Average Day w/o Event - Non-harvest					Notes
Employee (full-time)	105 x	15 gpcd	=	1,575 gal/day	
Employee (part-time)	35 x	15 gpcd	=	525 gal/day	
Tasting Visitors	550 x	3 gpcd	=	1,650 gal/day	Peak visitation assumed (3,850 visitors/week)
Tasting Visitors food pairing[1]	138 x	0.75 gpcd	=	104 gal/day	25% of tasting assumed to include food pairing
Total			=	3,854 gal/day	
			=	***3,860 gal/day***	

Peak Tasting Day Harvest w/Event					
Employee (full-time)	105 x	15 gpcd	=	1,575 gal/day	
Employee (part-time)	35 x	15 gpcd	=	525 gal/day	
Tasting Visitors	550 x	3 gpcd	=	1,650 gal/day	Peak visitation assumed (3,850 visitors/week)
Tasting Visitors food pairing[1]	138 x	0.75 gpcd	=	104 gal/day	25% of tasting assumed to include food pairing
Largest Open House Event[2]	75 x	15 gpcd	=	1,125 gal/day	
Total			=	4,979 gal/day	
			=	***4,980 gal/day***	

DESIGN FLOW = **4,980 gal/day**

1) Food pairing assumed for 25% of tasting visitors

2) All meals are to be prepared in the commercial kitchen onsite, and portable toilets will be required for any special events with more than 75 guests. Multiple private/large events will not occur on the same day

ENCLOSURE C

SITE EVALUATION REPORT

EXISTING SEPTIC SYSTEM CONDITION ASSESSMENT REPORT

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 #:
APN: 030-110-019
(County Use Only) Reviewed by: Date:

PLEASE PRINT OR TYPE ALL INFORMATION

Property Owner Beaulieu Vineyards - Treasury Wine Estates	☐ New Construction ☒ Addition ☐ Remodel ☐ Relocation ☐ Other:
Property Owner Mailing Address 1000 Pratt Avenue	☐ Residential - # of Bedrooms: Design Flow : gpd
City State Zip St. Helena CA 94574	☒ Commercial – Type: Sanitary Waste: TBD gpd Process Waste: gpd
Site Address/Location 1960 St. Helena Hwy, Napa, CA 94558	☐ Other: Sanitary Waste: gpd Process Waste: gpd

Evaluation Conducted By:

Company Name Summit Engineering Inc	Evaluator's Name Steve Worrell	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist)
Mailing Address: 463 Aviation Blvd. Ste 200		Telephone Number 707-527-0775
City State Zip Santa Rosa CA 94503		Date Evaluation Conducted 02/15/17

Primary Area	**Expansion Area**
Acceptable Soil Depth: 25 in. Test pit #'s: TP-1A to TP-10A	Acceptable Soil Depth: 36 in. Test pit #'s:
Soil Application Rate (gal. /sq. ft. /day): 0.35-0.5	Soil Application Rate (gal. /sq. ft. /day): 0.5
System Type(s) Recommended: Subsurface drip	System Type(s) Recommended: Subsurface drip
Slope: 5 %. Distance to nearest water source: ft.	Slope: 5 %. Distance to nearest water source: ft.
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)
Groundwater Monitoring Performed? No ☒ Yes ☐ (attach results)	Groundwater Monitoring Performed? No ☐ Yes ☐ (attach results)

Site constraints/Recommendations:

A site evaluation was performed on February 15, 2017 with Napa County PBES representative Armeda Van Dam. A total of ten test pits were evaluated, and except for TP-5A all had at least 36 inches of acceptable soil for installation of a proposed dripfield or reserve area. From the onsite soil texturing, it was determined that the soils were Sandy Clay Loam and Clay Loam, with subangular, weak to moderate structure. The application rate will be 0.3 gal/SF/day for clay loam with weak structure (per Geoflow standards), or 0.5 gal/SF/day for pretreated effluent in areas where acceptable depth to a limiting condition and moderate structure is available.

Test Pit #	Horizon Depth (inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
						Side Wall	Ped	Wet			
TP-1A	0-6	C	<10	SCL	W	S	FRB	SS	CF	CF	None
	6-24	C	10-15	SCL	W	S	FRB	SS	CF	FF	None
	24-60		<10	SL	W	S	L	NS	CF	FF	None
TP-2A	0-15	C	<10	SCL	W	H	FRB	NS	CF	CM	None
	15-32	G	10-15	SCL	W	H	FRB	NS	CF	CM	None
	32-64		<10	CL	W	VH	F	NS	CF	CF	None
TP-3A	0-6	G	10-15	SCL	W	L	FRB	NS	CM	CM	None
	6-30	C	25-30	SCL	W	L	FRB	NS	CM	CM	None
	30+		>50%								
TP-4A	0-6	G	10-15	SCL	W	L	FRB	NS	CM	CM	None
	6-25	G	25-30	SCL	W	L	FRB	NS	CM	CM	None
	25+		>50%								
TP-5A	0-4	G	10-15	SCL	W	L	FRB	NS	CM	CM	None
	4-20	G	25-30	SCL	W	L	FRB	NS	CM	CM	None
	20+		>50%								
TP-6A	0-15	G	<10	SCL	W	L	FRB	NS	CM	CM	None
	15-40	C	<10	SiC	W	S	FRB	SS	CF	CM	None
	40+	Groundwater / saturated soil									
TP-7A	0-6	G	<10	SCL	W	L	FRB	NS	CM	CM	None
	6-25	G	<10	SCL	M	SH	FRB	NS	CF	CF	None
	25-50	G	25-30	SCL	W	L	FRB	NS	CM	CM	None
	50+	Groundwater / saturated soil									
TP-8A	0-8	G	<10	SCL	W	L	FRB	NS	CM	CM	None
	8-36	G	<10	SCL	M	SH	FRB	NS	CF	CF	None
	36-52	G	30-40	SCL	W	L	FRB	NS	CM	CM	None
	52+	Groundwater / saturated soil									
TP-9A	0-6	G	<10	SCL	W	L	FRB	NS	CM	CM	None
	6-30	G	<10	SCL	M	SH	FRB	NS	CF	CF	None
	30-52	G	30-40	SCL	W	L	FRB	NS	CM	CM	None
	52+	Groundwater / saturated soil									
TP10-A	0-12	G	<10	SCL	W	L	FRB	NS	CM	CM	None
	12-36	G	<10	SCL	M	SH	FRB	NS	CF	CF	None
	36-60		30-40	SCL	W	L	FRB	NS	CM	CM	None

Boundary	Texture	Structure	Consistence			Pores	Roots	Mottling
			Side Wall	Ped	Wet			
A=Abrupt <1"	**S**=Sand	**W**=Weak	**L**=Loose	**L**=Loose	**NS**=NonSticky	**Quantity:**	**Quantity:**	**Quantity:**
C=Clear 1"-2.5"	**LS**=Loamy Sand	**M**=Moderate	**S**=Soft	**VFRB**=Very F	**SS**=Slightly	**F**=Few	**F**=Few	**F**=Few
G=Gradual 2.5"-5"	**SL**=Sandy Loam	**S**=Strong	**SH**=Slightly Hard	Friable	Sticky	**C**=Common	**C**=Common	**C**=Common
D=Diffuse >5"	**SCL**=Sandy Clay Loam	**G**=Granular	**H**=Hard	**FRB**=Friable	**S**=Sticky	**M**=Many	**M**=Many	**M**=Many
	SC=Sandy Clay	**Pl**=Platy	**VH**=Very Hard	**F**=Firm	**VS**=Very	**Size:**	**Size:**	**Size:**
	CL=Clay Loam	**Pr**=Prismatic	**ExH**=	**VF**=Very	Sticky	**VF**=Very	**F**=Fine	**F**=Fine
	L=Loam	**C**=Columnar	Extrm Hard	Firm	**NP**=Non	Fine	**M**=Medium	**M**=Medium
	C=Clay	**AB**=Ang. Blocky		**Ex=**	Plastic	**F**=Fine	**C**=Coarse	**C**=Coarse
	SiC=Silty Clay	**SB**=Subang.Blocky		Extrm. Firm	**SP**=Slightly	**M**=Medium	**VC**=Very	
	SiCL=Silty Clay Loam	**M**=Massive			Plastic	**C**=Coarse	Coarse	**Contrast:**
	SiL=Silt Loam	**SG**=Single Grain			**P**=Plastic	**VC**=Very	**ExC**=Extrm.	**Ft**=Faint
	Si=Silt	**C**=Cemented			**VP**=Very	Coarse	Coarse	**D**=Distinct
					Plastic			**P**=Prominent

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 #:
APN: 030-110-019
(County Use Only) Reviewed by: Date:

PLEASE PRINT OR TYPE ALL INFORMATION

Property Owner Beaulieu Vineyards - Treasury Wine Estates	☐ New Construction ☒ Addition ☐ Remodel ☐ Relocation ☐ Other:
Property Owner Mailing Address 1000 Pratt Avenue	☐ Residential - # of Bedrooms: Design Flow : gpd
City: St. Helena State: CA Zip: 94574	☒ Commercial – Type: Sanitary Waste: TBD gpd Process Waste: gpd
Site Address/Location 1960 St. Helena Hwy, Napa, CA 94558	☐ Other: Sanitary Waste: gpd Process Waste: gpd

Evaluation Conducted By:

Company Name Summit Engineering Inc	Evaluator's Name Claudia Llerandi	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist)
Mailing Address: 463 Aviation Blvd. Ste 200		Telephone Number 707-527-0775
City: Santa Rosa State: CA Zip: 94503		Date Evaluation Conducted 03/16/17

Primary Area	**Expansion Area**
Acceptable Soil Depth: 36 in. Test pit #'s: TP-1B - TP-9B	Acceptable Soil Depth: 36 in. Test pit #'s:
Soil Application Rate (gal. /sq. ft. /day): 0.5	Soil Application Rate (gal. /sq. ft. /day): 0.5
System Type(s) Recommended: Subsurface drip	System Type(s) Recommended: Subsurface drip
Slope: 5 %. Distance to nearest water source: ft.	Slope: 5 %. Distance to nearest water source: ft.
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)
Groundwater Monitoring Performed? No ☒ Yes ☐ (attach results)	Groundwater Monitoring Performed? No ☐ Yes ☐ (attach results)

Site constraints/Recommendations:

A site evaluation was performed on March 16, 2017 with Napa County PBES representative Maureen Shields. A total of nine test pits were evaluated, all of which had at least 36 inches of acceptable soil for installation of a proposed dripfield. TP7-B showed mottling on one sidewall, thus this area will be avoided during dripline installation. From the onsite soil texturing, it was determined that the soils were Sandy Clay Loam, with subangular, weak to moderate structure, although the soil was too wet to sieve. Two sample were collected, one for test pit TP1-B from 0 to 36", and one from test pit 5 from 30 to 36". The samples hydrometer test classified Pit 1 as Sandy Loam, and Pit TP-5B as Sand. The application rate will be governed by the hand texturing (more conservative) for pit TP-1B and will be 0.5 gal/SF/day for septic tank effluent and sandy clay loam with weak to moderate structure, with pretreatment being used for 1 foot of soil credit.

Site: **Beaulieu Vineyards** Date: 3/16/2017 Page _4__ of _5__

Test Pit #	Horizon Depth (inches)	Boundary	%Rock	Texture	Structure		Consistence			Pores	Roots	Mottling	NOTES
					Grade	Shape	Side Wall	Ped	Wet				
TP-1	0-36	NA	5-10	SL	W-M	SB	S	FRB	SS,SP	F,F/M	F,F	None	Sample collected 0-36"
TP-2	0-36	NA	10-15	SCL	W-M	SB	S	VFRB/FRB	SS,SP	F,F/M	F,F	None	
TP-3	0-38	NA	10-15	SCL	W-M	SB	S	VFRB/FRB	SS,SP	F,F/M	F,F	None	
TP-4	0-36	D	10-15	SCL	W-M	SB	S	FRB	SS,SP	F,F/M	F,F	None	
	36-42	NA	15-20	SL	W-M	SB	S	VFRB/FRB	SS,SP	F,F/M	None	None	
TP-5	0-36	NA	20-30	S	W-M	SB	S	VFRB/FRB	SS,SP	F,F/M	F,F	None	Sample collected 30-36"
TP-6	0-41	NA	15-20	SCL	W-M	SB	S	VFRB/FRB	SS,SP	F,F/M	F,F	None	
TP-7	0-37	NA	15-20	SCL	W-M	SB	S	VFRB/FRB	SS,SP	F,F/M	F/C,F	F,F,FT	Only one sidewall w/ signs of mottling
TP-8	0-40	NA	5-10	SCL	W-M	SB	S	VFRB/FRB	SS,SP	F,F/M	F,F	None	
TP-9	0-36	G	10-15	SCL	W-M	SB	S	VFRB/FRB	SS,SP	F,F/M	F,F	None	
	36-42	NA	50	LS	W	G	L	L	NS,NP	F,F/M	F,F	None	

Boundary	Texture	Structure	Consistence			Pores	Roots	Mottling
			Side Wall	Ped	Wet			
A=Abrupt <1"	**S**=Sand	**W**=Weak	**L**=Loose	**L**=Loose	**NS**=NonStick	**Quantity:**	**Quantity:**	**Quantity:**
C=Clear 1"-2.5"	**LS**=Loamy Sand	**M**=Moderate	**S**=Soft	**VFRB=**Very F	**SS**=Slightly	**F**=Few	**F**=Few	**F**=Few
G=Gradual 2.5"-5"	**SL**=Sandy Loam	**S**=Strong	**SH**=Slightly Hard	Friable	Sticky	**C**=Common	**C**=Common	**C**=Common
D=Diffuse >5"	**SCL**=Sandy Clay Loam	**G**=Granular	**H**=Hard	**FRB**=Friable	**S**=Sticky	**M**=Many	**M**=Many	**M**=Many
	SC=Sandy Clay	**Pl**=Platy	**VH**=Very Hard	**F**=Firm	**VS**=Very	**Size:**	**Size:**	**Size:**
	CL=Clay Loam	**Pr**=Prismatic	**ExH**=	**VF**=Very	Sticky	**VF**=Very	**F**=Fine	**F**=Fine
	L=Loam	**C**=Columnar	Extrm Hard	Firm	**NP**=Non	Fine	**M**=Medium	**M**=Medium
	C=Clay	**AB**=Ang. Blocky		**Ex=**	Plastic	**F**=Fine	**C**=Coarse	**C**=Coarse
	SiC=Silty Clay	**SB**=Subang.Blocky		Extrm. Firm	**SP**=Slightly	**M**=Medium	**VC**=Very	
	SiCL=Silty Clay Loam	**M**=Massive			Plastic	**C**=Coarse	Coarse	**Contrast:**
	SiL=Silt Loam	**SG**=Single Grain			**P**=Plastic	**VC**=Very	**ExC**=Extrm.	**Ft**=Faint
	Si=Silt	**C**=Cemented			**VP**=Very Plastic	Coarse	Coarse	**D**=Distinct
								P=Prominent

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SUMMIT

Summit Engineering, Inc
463 Aviation Blvd., Suite 200 • Santa Rosa, CA 95403
707-527-0775 • www.summit-sr.com

BEAULIEU VINEYARDS
1960 ST. HELENA HIGHWAY
NAPA, CA 94558
APN 030-110-019

USE PERMIT ASSISTANCE

SOILS EVALUATION

2017-04-12 PERMIT SUBMITTAL

DATE:	2017-02-21
JOB NO:	2017017
SCALE:	AS SHOWN
DRAWN:	JA
CHECKED:	SW
SHEET	TP1

\\SEI1.SUMMITA.LOCAL\P\2017\2017017 BEAULIEU VINEYARDS UP ASSISTANCE\CAD\WWW\17017-TP1.DWG PLOTTED ON: 4/12/2017 8:39 AM

Experience is the difference

March 23, 2017

Client: Summit Engineering
Job: Beaulieu Vineyards UP Assistance
Job #: 9118.15
Client Job #: 2017017
Sample ID: TP-1
Depth: 0”-36”

Subject: **Laboratory Test Results**
Soil Texture Analysis by
Bouyoucos Hydrometry Method

This letter transmits the results of our laboratory testing performed for the subject project. We performed a Soil Texture Analysis by the Bouyoucos Hydrometery Method with the following results:

Size/Density	TP-1 @ 0”-36”
+ #10 Sieve	26.2 %
Sand	63.6 %
Clay	14.2 %
Silt	22.2 %
Db g/cc	---

We trust this provides the information required at this time. Should you have further questions, please call.

Regards,

RGH GEOTECHNICAL

Sean Flinn
Laboratory Technician

Experience is the difference

March 23, 2017

Client: Summit Engineering
Job: Beaulieu Vineyards UP Assistance
Job #: 9118.15
Client Job #: 2017017
Sample ID: TP-5
Depth: 30”-36”

Subject: **Laboratory Test Results**
Soil Texture Analysis by
Bouyoucos Hydrometry Method

This letter transmits the results of our laboratory testing performed for the subject project. We performed a Soil Texture Analysis by the Bouyoucos Hydrometery Method with the following results:

Size/Density	TP-5 @ 30”-36”
+ #10 Sieve	53.6 %
Sand	88.6 %
Clay	4.2 %
Silt	7.2 %
Db g/cc	---

We trust this provides the information required at this time. Should you have further questions, please call.

Regards,

RGH GEOTECHNICAL

Sean Flinn
Laboratory Technician

McCollum

General Engineering Contractor
P.O. Box 2223
Yountville, CA 94599
Phone: 707.252.6220
Fax: 707.224.1753
MGECONSTRUCTION@YAHOO.COM

Eric Fitz

RE: B.V. Winery

As instructed by Eric Fitz, McCollum General Engineering (M.G.E.) conducted an investigation of the existing septic system located at 1960 Highway 29, Rutherford, CA. The following information was collected during a one day investigation (3/16/2017).

1. The septic tank was located, opened, and visually inspected. The tank was not pumped at this time as per client request. The septic tank is located in the asphalt parking lot at the south side of the facility. The inlet T, outlet T are in place. There is a clean out at the tank outlet.

Septic tank location.

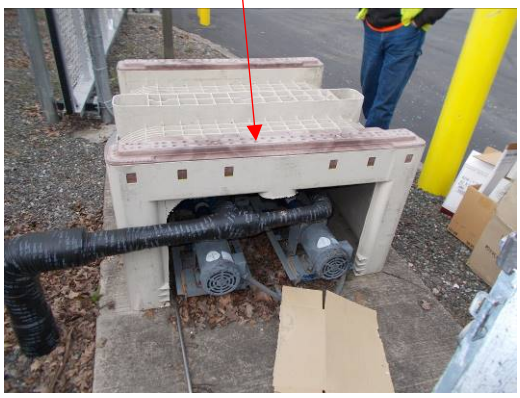
T's are in place.

Clean out at outlet.

2. The pump tank was located and visually inspected. The pumps are under a grape bin that has been modified as a cover. The panel is weathered and was bolted shut so we could not check the internal components.

Pump tank.

Pumps under grape bin cover.



Control panel weathered.

2. Leach lines were probed, rodded and potholed for location and depth. There are four distribution boxes. The first distribution box is large in size and accepts the flow from the pump tank. The large distribution box then equally flows to three smaller distribution boxes that feed three sets of three four inch Orangburge leach lines. The leach lines are two hundred feet each and are spaced twelve feet apart. Leach lines are free of obstructions and debris at this time.

Leach field location

Main D-box.

D-box for leach field

4” Orangeburg leach line

One inch rock

32” of soil cover over pipe

MGE replaced access lids at the septic tank and secured. All potholes in the leach field were backfilled.

Municode setbacks for septic system construction–

http://library.municode.com/index.aspx?clientId=16513&stateId=5&stateName=California

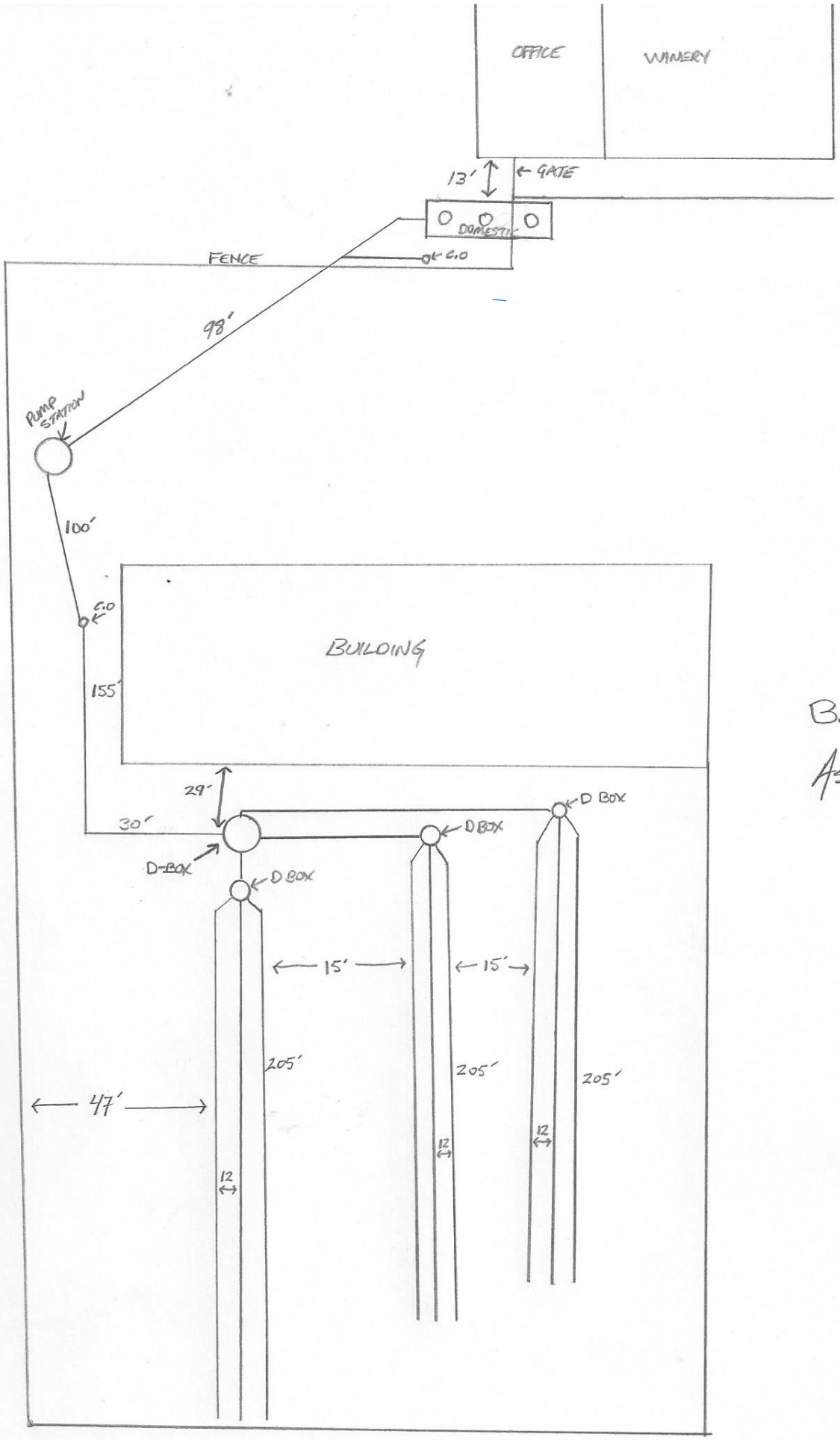
Please call if you have any questions.

Sincerely,
Gary L. McCollum
COWA/NAWT Certified Onsite
Waste Water Inspector/Installer

Company Disclaimer

Based on what we were able to observe and our experience with onsite wastewater technology, we submit this Onsite Wastewater Treatment System Inspection Report based on the present condition of the onsite wastewater treatment system. McCollum General Engineering has not been retained to warrant, guarantee, or certify the proper functioning of the system for any period of time in the future. Because of the numerous factors (usage, soil characteristics, previous failures, etc.) which may effect the proper operation of a wastewater treatment system, this report shall not be construed as a warranty by our company that the system will function properly for any particular owner or buyer. McCollum General Engineering DISCLAIMS ANY WARRANTY, either expressed or implied, arising from the inspection of the wastewater treatment system or this report. We are also not ascertaining the impact the system is having on the environment.

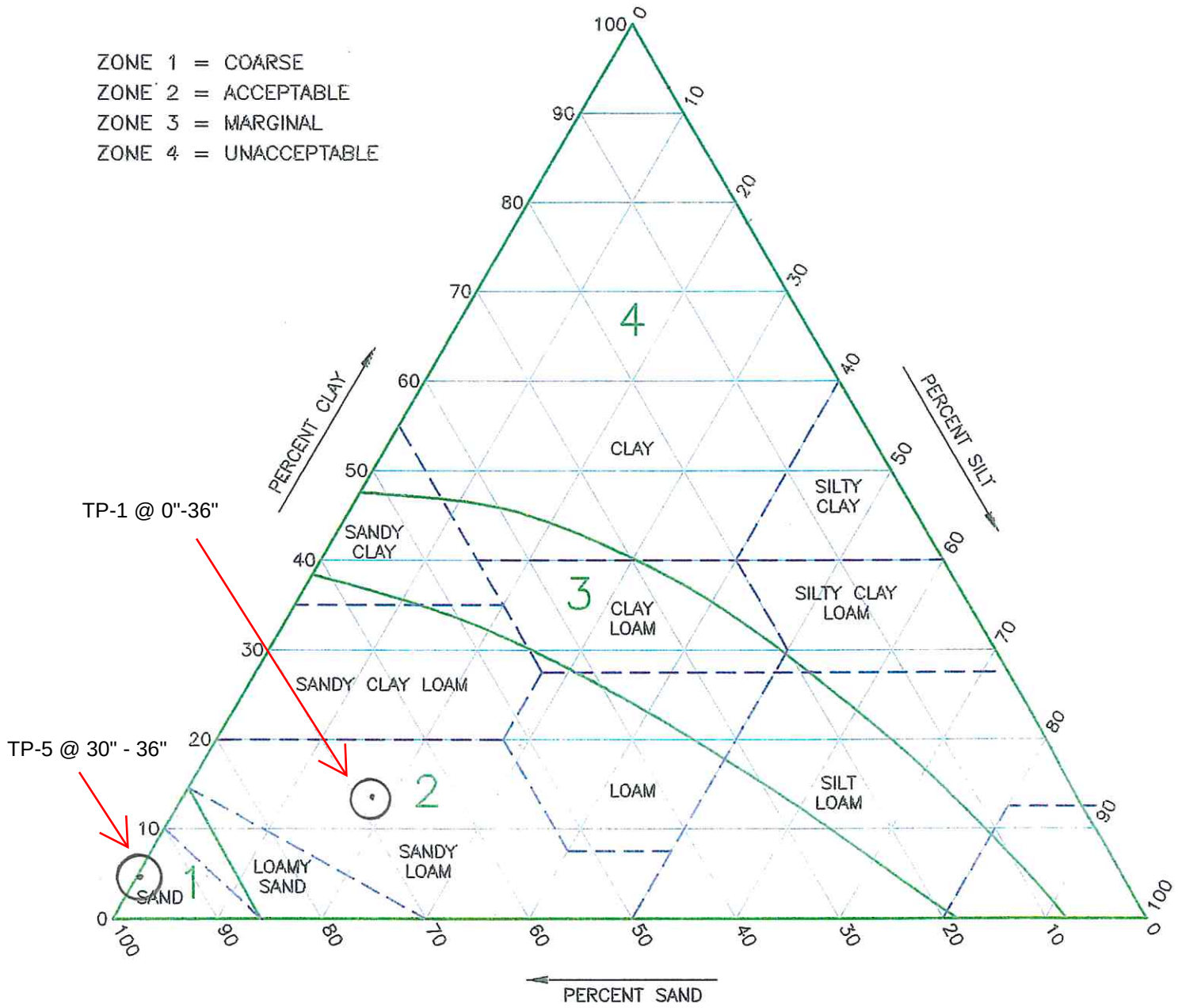
County parcel map with approximant septic location



1960 HIGHWAY 29
B.V. WINERY
AS-BUILT 3-16-2017
S.S. SYSTEM

SOIL PERCOLATION SUITABILITY CHART

ZONE 1 = COARSE
ZONE 2 = ACCEPTABLE
ZONE 3 = MARGINAL
ZONE 4 = UNACCEPTABLE



Instructions:

1. Plot texture on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjust for coarse fragments by moving the plotted point in the sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.
3. Adjust for compactness of soil by moving the plotted point in the clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc.

Note:

For soils falling in sand, loamy sand or sandy loam classification bulk density analysis will generally not affect suitability and analysis not neccesary.

McCollum

General Engineering Contractor

P.O. Box 2223

Yountville, CA 94599

Phone: 707.252.6220

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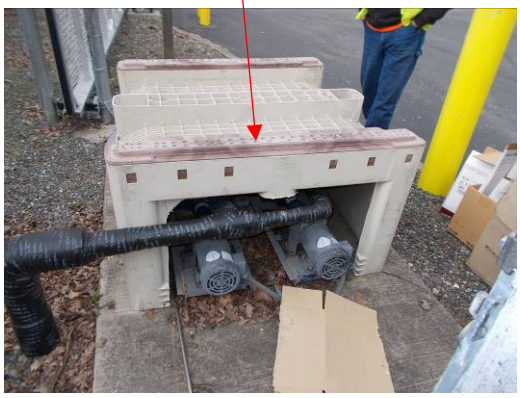

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Leach field location

Main D-box.

D-box for leach field

4” Orangeburg leach line

One inch rock

32” of soil cover over pipe

MGE replaced access lids at the septic tank and secured. All potholes in the leach field were backfilled.

Municode setbacks for septic system construction–

http://library.municode.com/index.aspx?clientId=16513&stateId=5&stateName=California

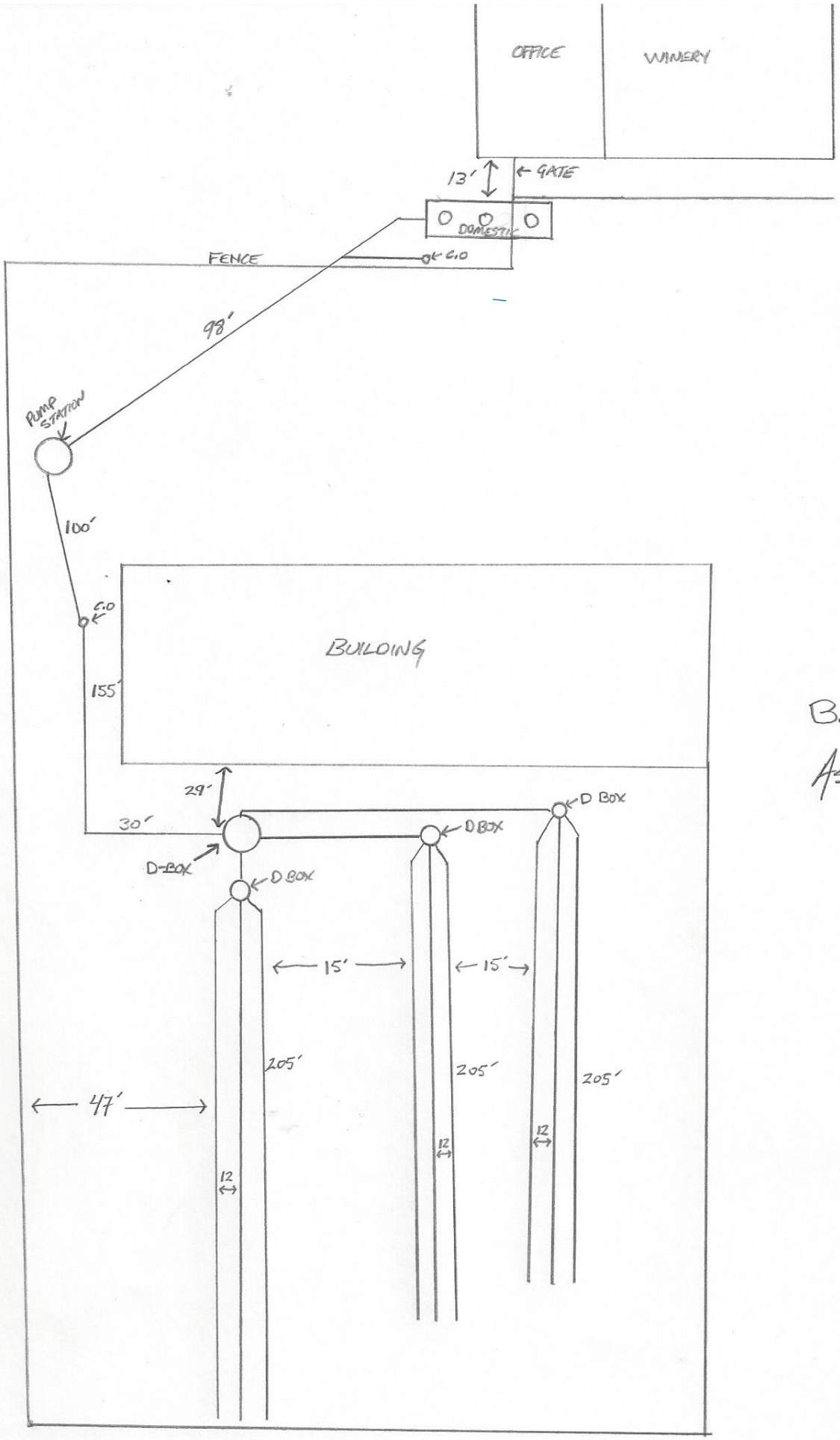
Please call if you have any questions.

Sincerely,
Gary L. McCollum
COWA/NAWT Certified Onsite
Waste Water Inspector/Installer

Company Disclaimer

Based on what we were able to observe and our experience with onsite wastewater technology, we submit this Onsite Wastewater Treatment System Inspection Report based on the present condition of the onsite wastewater treatment system. McCollum General Engineering has not been retained to warrant, guarantee, or certify the proper functioning of the system for any period of time in the future. Because of the numerous factors (usage, soil characteristics, previous failures, etc.) which may effect the proper operation of a wastewater treatment system, this report shall not be construed as a warranty by our company that the system will function properly for any particular owner or buyer. McCollum General Engineering DISCLAIMS ANY WARRANTY, either expressed or implied, arising from the inspection of the wastewater treatment system or this report. We are also not ascertaining the impact the system is having on the environment.

County parcel map with approximant septic location



1960 HIGHWAY 29
B.V. WINERY
AS-BUILT 3-16-2017
S.S. SYSTEM

ORANGEBURGE PIPE

Orangeburg pipe (also known as "fiber conduit", "bituminous fiber pipe" or "Bermico") is bitumenized fiber pipe made from layers of wood pulp and pitch pressed together. It was used from the 1860s through the 1970s, when it was replaced by PVC pipe for water delivery and ABS pipe for drain-waste-vent (DWV) applications. The name comes from Orangeburg, New York, the town in which most Orangeburg pipe was manufactured. It was manufactured largely by the Fiber Conduit Company, which changed its name to the Orangeburg Manufacturing Company in 1948.

History

The first known use of fiber pipe was in an experimental water delivery pipe in the Boston area. The pipeline, finished in 1867, measured 1.5 miles in length and was in use through 1927. Bitumenized pipe was not in widespread commercial use until the late 19th century when it was utilized exclusively as electrical conduit.

In 1893, Stephen Bradley, Sr. founded the Fiber Conduit Company in Orangeburg, New York. Bradley's neighboring Union Electric Company electric power plants used exhaust steam from their steam generators to dry the fiber conduit before they were sealed with pitch. In turn, the Fiber Conduit Company's conduits were used to run electrical wiring throughout numerous newly constructed buildings across the country for the next forty years. Bradley, along with several competitors, laid miles of the fiber electrical conduit in sky-scrapers, such as the Empire State Building.

The early 1900s brought massive expansion of the telephone, telegraph and electrical industries along with subway construction along the eastern seaboard. This expansion in the usage of electrical and telecommunications wiring brought with it a rising demand for fiber conduit, which was being used to contain this wiring within buildings, as well as in subway tunnels. In addition, fiber conduit was increasingly being used to create underground ducting for distributing wires under streets and roads, as well as along railroads.

Fiber was next adopted by the booming oil industry to pump salt waste-water from drilling sites to treatment and disposal areas. This industrial use quickly yielded the insight that while long-lived and incredibly durable in normal draining operations, bitumenized fiber easily ruptured under pressure. During this trial usage by the oil industry, the fiber conduit pipe tested was called "Alkacid" by the Fiber Conduit Co. of Orangeburg, New York. Owing to the aforementioned issues with pressurized usage, the oil industry soon stopped using the fiber "Alkacid" pipe and started using cement-asbestos pipe.

While a variety of companies competed with Fiber Conduit Company, it was by far and away the largest producer of bitumenized fiber conduit piping throughout the early 20th century and demand for fiber conduit only increased during World War II with the need for electrical conduit for use in new airfields and military bases. In 1948, the name of the Fiber Conduit Company was changed to the Orangeburg Manufacturing Company. As World War II ended and gave rise to the post-war housing boom, the demand for cheap housing materials was at an all-time high and available drainage materials were scarce. Orangeburg Manufacturing produced a thicker-walled, sturdier, round version of fiber conduit, selling it as "Orangeburg pipe" for sewer and drain uses.

Preventive Maintenance for Homes with Onsite Wastewater Collection and Treatment Systems

DO'S AND DON'TS FOR INSIDE THE HOUSE

There are a number of do's and don'ts that will help ensure a long life and minimal maintenance for your system. As a general rule, nothing should be disposed into any wastewater system that hasn't first been ingested, other than toilet tissue, mild detergents, and wash water. Here are some additional guidelines.

DON'T flush dangerous and damaging substances into your wastewater treatment system. (Please refer to the "Substitutes for Household Hazardous Waste," on page 4) Specifically, do not flush . . .

- **Excessive amounts of bath or body oils**
- **Water softener backwash**
- **Flammable or toxic products**
- **Household cleaners, especially floor wax and rug cleaners**
- **Chlorine bleach, chlorides, and pool or spa products**
- **Pesticides, herbicides, or agricultural chemicals or fertilizers**

DON'T use special additives that are touted to enhance the performance of your tank or system. Additives can cause major damage to your drainfield and other areas in the collection system. The natural microorganisms that grow in your system generate their own enzymes that are sufficient for breaking down and digesting nutrients in the wastewater.

DO use your trash can to dispose of substances that cause maintenance problems and/or increase the need for septage pumping. Dispose of the following with your trash:

- **Egg shells, cantaloupe seeds, gum, coffee grounds, tea bags, chewing tobacco, cigarette butts**
- **Paper towels, newspapers, sanitary napkins, diapers, kitty litter, candy wrappers**
- **Cooking grease**
- **Rags, large amounts of hair**

DO collect grease in a container and dispose with your trash. And avoid using garbage disposals excessively. Compost scraps or dispose with your trash, also. Food byproducts accelerate the need for septage pumping and increase maintenance.

DO'S AND DON'TS FOR INSIDE THE HOUSE

DON'T leave interior faucets on to protect water lines during cold spells. A running faucet can easily increase your wastewater flow by 1,000 to 3,000 gallons per day and hydraulically overload your system. Instead, properly insulate or heat your faucets and plumbing.

DON'T use excessive amounts of water. Using 50 gallons per person per day is typical. If your household does not practice any of the "water conserving tips" below, you may be using too much water.

DO conserve water:

- Take shorter showers or baths with a partially filled tub. Be cautious about excessive use of large soaking tubs.
- Don't let water run unnecessarily while brushing teeth or washing hands, food, dishes, etc.
- Wash dishes and clothes when you have a full load.
- When possible, avoid doing several loads in one day.
- Use water saving devices on faucets and showerheads.
- When replacing old toilets, buy low-flush models.

DON'T ignore leaky plumbing fixtures; repair them. A leaky toilet can waste up to 2,000 gallons of water in a single day. That's 10-20 times more water than a household's typical daily usage. Leaky plumbing fixtures increase your water bill, waste natural resources, and overload your system.

DO keep lint out of your wastewater treatment system by cleaning the lint filters on your washing machine and dryer before every load. Installing a supplemental lint filter on your washing machine would be a good precautionary measure. (This normally takes just a few minutes. Lint and other such materials can make an extreme difference in the frequency and cost of pumping out your primary treatment tank.)

DO'S AND DON'TS FOR INSIDE THE HOUSE

DO use substitutes for household hazardous waste. Replace the following hazardous products with products that are less environmentally harmful. The hazardous cleaners are listed below, followed by the suggested substitute.

Ammonia-based cleaners: Sprinkle baking soda on a damp sponge. For windows, use a solution of 2 tbs. white vinegar to 1 qt. water. Place the mixture into a spray bottle.

Disinfectants: Use borax: 1/2 cup in a gallon of water; deodorizes also.

Drain decloggers: Use a plunger or metal snake, or remove and clean trap.

Scouring cleaners & powders: Sprinkle baking soda on a damp sponge or add 4 tbs. baking soda to 1 qt. warm water. Or use Bon Ami; it's cheaper and won't scratch.

Carpet/upholstery cleaners: Sprinkle dry cornstarch or baking soda on, then vacuum. For tougher stains, blot with white vinegar in soapy water.

Toilet cleaners: Sprinkle on baking soda or Bon Ami, then scrub with a toilet brush.

Furniture/floor polishes: To clean, use oil soap and warm water. Dry with soft cloth. Polish with 1 part lemon juice and 2 parts oil (any kind), or use natural products with lemon oil or beeswax in mineral oil.

Metal cleaners: Brass and copper: scrub with a used half of lemon dipped in salt. Stainless steel: use scouring pad and soapy water. Silver: rub gently with toothpaste and soft wet cloth.

Oven cleaners: Quickly sprinkle salt on drips, then scrub. Use baking soda and scouring pads on older spills.

Laundry Detergents: Choose one with a zero phosphate content or use soap flakes with 1/3 cup of washing soda. (Before switching, wash clothes in pure washing soda to remove residues.)

DO'S AND DON'TS FOR OUTSIDE THE HOUSE

DON'T dig without knowing the location of your wastewater treatment system. As much as possible, plan landscaping and permanent outdoor structures before installation. But easily removable items, such as bird baths and picnic tables, are OK to place on top of your system.

DON'T drive over your tank or any buried components in your system, unless it's been equipped with a special traffic lid. If the system is subject to possible traffic, put up a barricade or a row of shrubs.

DON'T dump RV waste into your wastewater treatment system and tanks. It will increase the frequency of required septage pumping. When dumped directly into the pumping vault, RV waste clogs or fouls equipment, causing undue maintenance and repair costs. (Some RV waste may contain chemicals that are toxic or that may retard the biological digestion occurring within the tank.)

DON'T ever connect rain gutters or storm drains to the sewer or allow surface water to drain into it. And don't discharge hot tub water into your system. The additional water will increase costs, reduce the capacity of the collection and treatment systems, and flood the drainfield. It can also wash excess solids through the tank.

DO keep the tank access lid secure to the riser at all times. If bolts are lost or damaged, call Orenco Systems immediately for replacement: 1-800-348-9843.

DON'T enter your tank. Any work to the tank should be done from the outside. Gases that can be generated in the tank and/or oxygen depletion can be fatal.

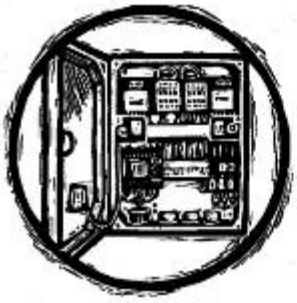
OUTSIDE THE HOUSE

DO make arrangements with a reliable service person to provide regular monitoring and maintenance. Place the service person's phone number on or in your control panel!

DO keep a file copy of your service provider's sludge and scum monitoring report and pumpout schedule. This information will be beneficial for real estate transactions or regulatory visits.

DO keep an "as built" system diagram in a safe place for reference.

AT THE CONTROL PANEL



DO locate your electrical control panel where it will be protected from potential vandalism and have unobstructed access.

DO familiarize yourself with the location of your wastewater treatment system and electrical control panel. Refer to the panel's model number (on the back of this booklet) when reporting a malfunction in the system.

DO take immediate action to correct the problem in the event of an alarm condition. Call your system operator or maintenance company immediately whenever an alarm comes on; it sounds like a smoke alarm.

DO remember that the audible alarm can be silenced by pushing the lighted button located directly above the "Push to Silence" label on the front of the electrical control panel. With normal use, the tank has a reserve storage capacity good for 24-48 hours.

DON'T turn off the main circuit breaker to the wastewater pumps when going on vacation. If there is any infiltration or inflow into the system, the pumps will need to handle it.

Napa County Guidelines

Disposal Field Landscaping Guidelines

Although the question of 'what do I plant over my disposal field?' arises often, there are few hard and fast answers as to what can be planted, because every drain field is unique. Plants can help your disposal field to function at its best by removing moisture and nutrients from the soil. Plant cover is also important to reduce soil erosion. At a minimum the disposal field should be planted with a dense cover of grass to provide theses important benefits.

The best choices for planting over disposal fields include shallow-rooted herbaceous plants, such as flowering perennials and annuals, turfgrass and many ground covers that are not excessively water loving.

Trees and shrubs are much riskier choices for planting on disposal fields. The woody roots of these plants are more likely to clog and damage drain lines. Be especially careful of water loving trees like willows, poplars and redwoods. Some smaller and less-aggressive woody species may be suitable for planting over the disposal field. Some possibilities include fibrous rooted shrubs such as boxwood or holly or small trees such as dogwoods. Be sure not to plant small trees and shrubs directly over a leach line.

Irrigation is one of the most important things to consider when landscaping your disposal field. Do not install subsurface drip or sprinklers on the disposal field. Water any vegetation minimally by hand or with a surface drip system.

The following plant list has been provided for guidance only. Please consult with a landscaper or local nursery for drought tolerant plants with non-invasive root systems.

Plant List

	Common Name	*Color*	*Height*
Herbaceous Plants			
Achillea species	Yarrow	Y, W, R	12”
Arctotheca calendula	Cape Weed	Y	6”
Artemisia schmidtiana	Silver Mound	X	2’
Centaurea cyanus	Bachelor’s Button	B, P, R. W	1’- 2’
Cosmos bipinnatus	Cosmos: Dazzler	R	3’ – 6’
Cosmos bipinnatus	Cosmos: Radiance	Y	3’ – 6’
Cosmos sulphureus	Yellow cosmos	Y	3’ – 4’
Diplacus species	Monkey Flower	Many	1’ – 3’
Dietes iridioides	Fortnight Lily	W	4’
Erigeron karvinskianus	Fleabane	W, P	1’ – 2’
Eschscholtzia californica	California Poppy	O, R	1’ – 2’
Festuca ovina glauca	Blue fescue	X	12”
Hemerocallis species	Daylillies	Many	1’ – 6’
Lantana montevidensis	Trailing Lantana	R	1’ – 2’
Lobularia maritima	Sweet Alyssum	W	6” – 12”
Myosotis sylvatica	Forget-Me-Not	B	6” – 12”
Oenothera species	Mexican Evening Primrose	R, W, Y	1’ –2’
Santolina species	Santolina	Y, W	1’ – 3’
Stachys byzantina	Lamb’s Ears	Pur	12”
Tropaeolum majus	Nasturtium	O, R, Y, W	12”
Verbena species	Verbena	Varies	1’ – 3’
Zauschneria californica	California Fuchsia	R	1’ – 2’
Bulbs			
Amaryllis belladonna	Naked Lady	P	3’
Crocosmia crocosmiiflora	Montbretia	R	2’
Iris species	Iris	Many	1’ – 2’
Narcissus species	Daffodil	Y, W	1’ – 2’
Tulip species	Tulip	Many	1’ – 2’
Succulents and Herbs			

Many varieties to choose from; very drought tolerant			
Woody Ground Covers			
Arctostaphylos uva-ursi	Ground cover manzanita	W	1’ – 2’
Baccharis pilularis	Coyote Bush	W	1’ – 2’
Ceanothus species	Various prostrate forms	B	1 ‘ –2’
Cotoneaster species	Various prostrate forms	R	6” – 12”
Juniperus species	Various prostrate forms	X	1’ – 2’
Rosmarinus officinalis	Prostrate Rosemary	B	1 ‘ – 2’

Colors Key: B = Blue; O = Orange; P = Pink; Pur = Purple; W = White; Y = Yellow; X = Non-flowering

McCollum General Engineering
P.O. Box 2223
Yountville, CA 94599
Phone: (707) 252-6220
Fax: (707) 224-1753

Invoice

DATE	INVOICE #
3/22/2017	17-8830

PAID 03/22/2017

BILL TO

B.V. Winery
1960 Hwy 29
Napa, CA 94588

JOB ADDRESS

1960 Hwy 29
Napa, CA 94588

DUE DATE	TERMS	A.P.N.	CONTRACT #
3/22/2017	Due on receipt		Septic Inspection

ITEM	DESCRIPTION	JOB DATE	QTY	RATE	AMOUNT
Septic Ins...	Septic Inspection and location of leach field. Tank not pumped by client request. Inspection of septic system, does not imply warranty of system.	3/16/2017		2,500.00	2,500.00

Thank you for your business.

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Invoice Total $2,500.00

Contact:
Gina Giacone
gina@summit-sr.com
(707) 636-9162

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