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Wastewater Feasibility Study



WINERY WASTEWATER FEASIBILITY REPORT

SAM JASPER WINERY
4059 SILVERADO TRAIL
NAPA, CALIFORNIA

APN 039-390-023

CLIENT:

San Bernabe Vineyard LLC
Chris Indelicato
455 Devlin Road, Suite 201
Napa, California 94558

Project# 4114025.0
November 13, 2015





WASTEWATER FEASIBILITY REPORT

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INTRODUCTION

The Owner is applying to the County of Napa for a Winery Use Permit that will allow operation of a 20,000 gallon per year winery on a 10.23 +/- acre parcel located at 4059 Silverado Trail, Napa. The current Assessor's Parcel Number is 039-390-023. There is an existing two bedroom residence on the parcel. The proposed winery will have two full-time, two part-time, and two part-time harvest employees.

Most of the property is relatively level and is currently used for vineyards. The existing residence sits approximately 1,000 feet northeast of the Napa River. The winery is proposed to sit next to the residence approximately 800 feet northeast of the Napa River in an area that is currently vineyard. One well exists on the site near the southeastern property line and will be available for winery use. Appendix 1 contains a Vicinity Map and a USGS Site Map showing the parcel topography, features and boundary. Appendix 2 contains a reduced version of the proposed winery plan set.

This report will evaluate the disposal of wastewater consisting of winery process wastewater, winery domestic wastewater, and the domestic wastewater from the existing residence.

EXISTING SEPTIC SYSTEM

Information from Napa County files for the parcel shows an existing septic system for the house consisting of a septic tank, primary and reserve distribution areas.

The distribution areas are located near the northern property boundary. This area will be impacted by the proposed winery improvements. It is proposed that the existing drain field be abandoned.

SITE EVALUATION

Riechers Spence & Associates conducted a site evaluation on the subject parcel on October 28, 2011. Appendix 4 contains a map of test pit locations and test pit logs for the site evaluation.

The site evaluation was conducted by Bruce Fenton of Riechers Spence and Associates and observed by Peter Ex of Napa County Environmental Management.

The soil sample results are shown in Appendix 4. Site evaluation test pit logs are shown in Appendix 4.



WINERY PROCESS WASTEWATER CHARACTERISTICS

- Wine Production:** 20,000 gallons of wine per year
2.38 gallons of wine per case
= 20,000 gal/year/2.38 cases/year
= 8,403 cases/year

- Wastewater Production:** 5 gallons of wastewater/gallon of wine
= 20,000 gal/year x 5 gal wastewater/gal
= 100,000 gal/year wastewater

- Peak Daily Waste Water Flow:** Crush Period = 45 days
20,000 gallons x 1.5 / 45 days
= 666 gallons/day

- Average Daily Flow:** 100,000 gal/year
= 100,000 gallons/year/365
= 274 gallons/day

- Monthly Wastewater Flows:** (See Table 2)

TABLE 2

	% By Month	Waste/Month	
Sept	15%	15,000	Gal/Month
Oct	15%	15,000	Gal/Month
Nov	11%	10,500	Gal/Month
Dec	8%	7,500	Gal/Month
Jan	4%	4,000	Gal/Month
Feb	6%	6,000	Gal/Month
Mar	6%	6,000	Gal/Month
Apr	5%	4,500	Gal/Month
May	6%	6,000	Gal/Month
Jun	7%	7,000	Gal/Month
Jul	9%	8,500	Gal/Month
Aug	10%	10,000	Gal/Month
Totals	100%	100,000	Gal/Year



DOMESTIC WASTEWATER CHARACTERISTICS

The winery domestic waste system has been sized to accommodate the unit values in Table 2 below. The number of visitors and employees is based on information provided by the owner. The projected flow is based on Napa County Environmental Management guidelines. The following is a summary of the estimated flows from the proposed winery.

Table 2

Use	Source	Number	Projected Flow (gpd)	Total Flow (gpd)
Winery	Full-time Employees	2	15	30
	Part-time Employees	2	15	30
	Part-time Harvest Employees	2	15	30
	Visitors	25	3	75
	Private Promotional with meals (on-site caterer)	50	15	750
Total People		81	Winery Peak Flow	915
Residential	Bedrooms	2	120	240
Combined Domestic Waste System			Total Peak Flow	1,155

WINERY PROCESS WASTEWATER – SURFACE DRIP IRRIGATION

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 septic tank, treatment tank with High Strength Membrane Bio-Reactor (HSMBR)



unit, and pump tank are proposed. This treatment train may be modified for more desirable treatment processes prior to submitting construction plans. The following sections describe this process in more detail.

Septic Tank

The septic tank will serve to buffer peak flows and strengths from overwhelming the system and impairing treatment. This tank has been designed with baffles near the outlet. This tank will provide three days storage and will also serve to function as a primary settling basin. This tank will be 2,000 gallons.

Treatment Tank

The treatment tank will serve to treat wastewater flows using a High Strength Membrane Bio-Reactor (HSMBR) unit. This tank will provide ten days storage. This tank will be 13,000 gallons.

Pump Tank

The pump tank will serve to hold treated wastewater prior to pumping to the holding tanks. This tank will house dual pumps. This tank will be 1,000 gallons.

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 Appendix 7. 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 well setback requirements. The area available for irrigation is shown in Appendix 6. An area of 4.60 acres of vineyard has been used to calculate the storage capacity required. Based on monthly analysis 14,115 gallons of storage is required. Storage capacity of 20,000 gallons is proposed.

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 tanks 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.

DOMESTIC WASTEWATER – SUBSURFACE DRIP

The existing septic system will be removed in accordance with Napa County Environmental Management requirements. Domestic wastewater from the existing residence will flow into a new HOOT H-600 tank. After pretreatment in the HOOT H-600, wastewater will be pumped to the proposed dispersal field.



Domestic wastewater for the proposed winery will flow to a 3,000 gallon septic tank. The effluent will then flow to a HOOT-1000 tank for treatment before being pumped to the dispersal field.

Wastewater from the kitchen will first flow to a 750-gallon grease interceptor tank before flowing to the 3,000-gallon septic tank. The 750-gallon grease interceptor tank will be capable of supporting 21 Drainage Fixture Units (DFUs) from the kitchen. See Table 1014.3.6 from the 2013 California Plumbing Code in Appendix 5.

The subsurface drip field is sized to meet Napa County Environmental Management guidelines. The distribution field will be placed in the area of the site evaluation where the most limiting usable soil type was sandy clay loam. The allowable application rate for sandy clay loam is 0.6 gallons/square foot/day for pre-treated effluent. Peak daily domestic wastewater flow is 1,155 gallons/day.

$$\text{Dispersal Field Area(primary)} = \frac{1,155 \text{ gpd}}{0.6 \text{ gpd / SF}} = 1,925 \text{ square feet}$$

In addition to the primary dispersal area of 1,925 square feet, a 200% reserve area is required. The reserve area will be located adjacent to the primary field where the soil application rate is also 0.6 gallons/square foot/day.

$$\text{Dispersal Field Area(reserve area)} = \frac{1,155 \text{ gpd}}{0.6 \text{ gpd / SF}} = 1,925 \text{ square feet}$$

The total requirement for domestic wastewater reserve dispersal area is 3,850 square feet. Total area required for the primary and reserve is 5,775 square feet.

The system layout is shown on Use Permit Plans in Appendix 2.

STORMWATER DIVERSION

Operational areas including crush pad, trash and recycling enclosure, and mechanical pad will be covered.

OPERATION AND MAINTENANCE

The winery process and domestic waste systems will be fully automated and has been 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 system. The contract with the responsible party will be provided prior to the final inspection for the system installed.



CONCLUSION

This report demonstrates that enough dispersion area is available making a subsurface drip system a feasible option for treating the Sam Jasper Winery's domestic wastewater. It has also been demonstrated that it is feasible to treat the winery process wastewater and distribute this to the vineyard using drip irrigation.

The above methodology results in a design that meets the Napa County Environmental Management Design standards for the treatment of winery and domestic wastewater.



ATTACHMENT 1

Vicinity Map & USGS Site Map

SAM JASPER WINERY VICINITY MAP



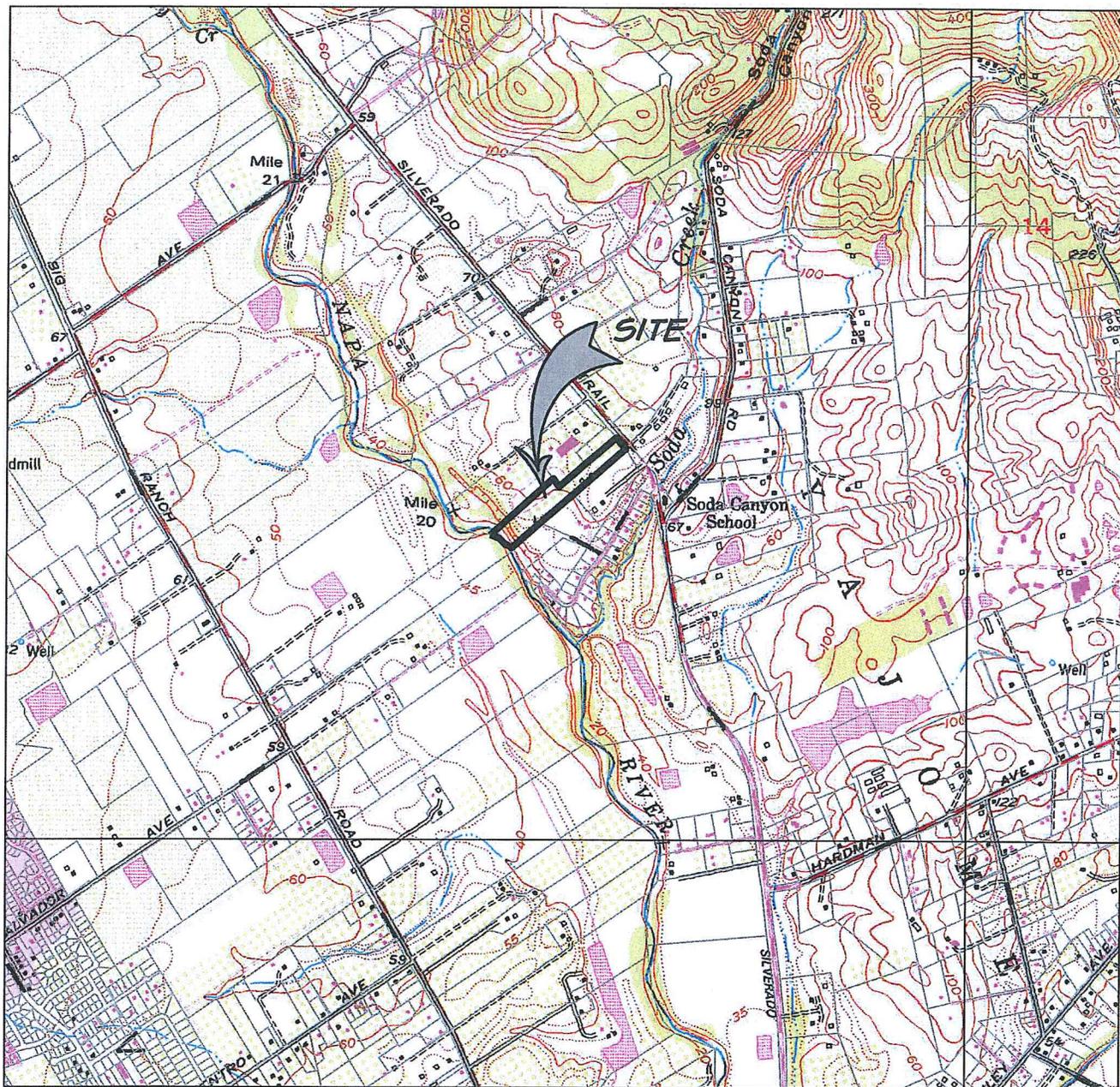
VICINITY MAP

SCALE: 1" = 3000'

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

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

SAM JASPER WINERY USGS MAP



VICINITY MAP

SCALE: 1" = 2000'

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

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

MAY 20, 2015

4114025.0

Exh-USGS



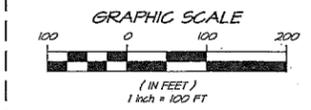
ATTACHMENT 2

Reduced Use Permit Plan Set

SAM JASPER WINERY USE PERMIT PLANS



VICINITY MAP
NOT TO SCALE



GRAPHIC SCALE
(IN FEET)
1 inch = 100 FT

ABBREVIATIONS

- AD AREA DRAIN
- AB AGGREGATE BASE
- AC ASPHALT/CONCRETE
- ARV AIR RELEASE VALVE
- ARCH ARCHITECT
- BP BACK FLOW PREVENTER
- BLDG BUILDING
- BH BENCHMARK
- BO BENCH
- BSH BACK OF SIDEWALK
- CIG CURB AND GUTTER
- CB CATCH BASIN
- CL CENTERLINE
- CO CLEANOUT
- CONF CONFORM
- CV CHECK VALVE
- DI DROP INLET
- DS DOWNSPOUT
- DH DOMESTIC WATER
- EX EXISTING
- ENR ENGINEER
- EP EDGE OF PAVEMENT
- FC FACE OF CURB
- FD FIRE DEPT. CONNECTION
- FF FINISH FLOOR
- FG FINISH GRADE
- FH FIRE HYDRANT
- FS FORGED SANITARY SEWER
- FL FLOW LINE
- FW FIRE WATER LINE
- GB GRADE BREAK
- HP HIGH POINT
- IN INVERT
- JP JOINT POLE
- LF LINEAL FEET/FOOT
- LP LOW POINT
- MA MANHOLE
- OC ON CENTER
- OH OVERHEAD
- PC PORTLAND CEMENT CONCRETE
- PFG PACIFIC GAS AND ELECTRIC
- PIV POST INDICATOR VALVE
- PL PLANTING AREA
- PVC POLYVINYL CHLORIDE
- PW PROCESS WATER
- PWM PROCESS WASTE WATER
- R RADIUS
- ROB RIGHT OF WAY
- S SLOPE
- SD STORM DRAIN
- SS SANITARY SEWER
- SAO SEE ARCHITECTURAL DRAWINGS
- SLAD SEE LANDSCAPE ARCH DRAWINGS
- SBD SEE STRUCTURAL DRAWINGS
- STA STATION
- STD STANDARD
- STL STEEL PIPE
- TC TOP OF CURB
- TM TOP OF MALL
- VCP VITRIFIED CLAY PIPE
- W WATER LINE
- WM WATER METER
- WV WATER VALVE

PROJECT INFORMATION

OWNER: SAN BERNABE VINEYARDS, LLC
455 DEVLIN ROAD, SUITE 201
NAPA, CA 94558
CONTACT: CHRIS INDELICATO

SITE ADDRESS: 4054 SILVERADO TRAIL
NAPA, CA 94558

CIVIL ENGINEER: RSA+
1515 FOURTH STREET
NAPA, CA 94559
CONTACT: BRUCE FENTON

ARCHITECT: HALL AND BARTLEY
4701 COLLO REDWOOD HIGHWAY
SANTA ROSA, CA 95403
CONTACT: ANNE MOORE

APN & AREA: 039-390-023 (10.23 ACRES ±)

EXISTING USE: VINEYARD

PROPOSED USE: VINEYARD AND WINERY

EXISTING ZONING: AH

NOTES

BOUNDARY NOTE:
THE BOUNDARIES SHOWN HEREIN ARE BASED UPON TOPOGRAPHIC MAP PREPARED BY RSA+, OCTOBER 2014.

BENCHMARK NOTE:
NAPA COUNTY BM 1756-C, ELEVATION = 67.34 (NGVD 1988).
PUBLISHED ELEVATION = 64.70' (NGVD 1929) CONVERSION PER CORPSCON: 1264.

FEMA NOTE:
FLOODWAY LIMITS BASED UPON FIRM MAP NO. 08055C0510F DATED SEPT. 26, 2008.

CIVIL SHEET INDEX

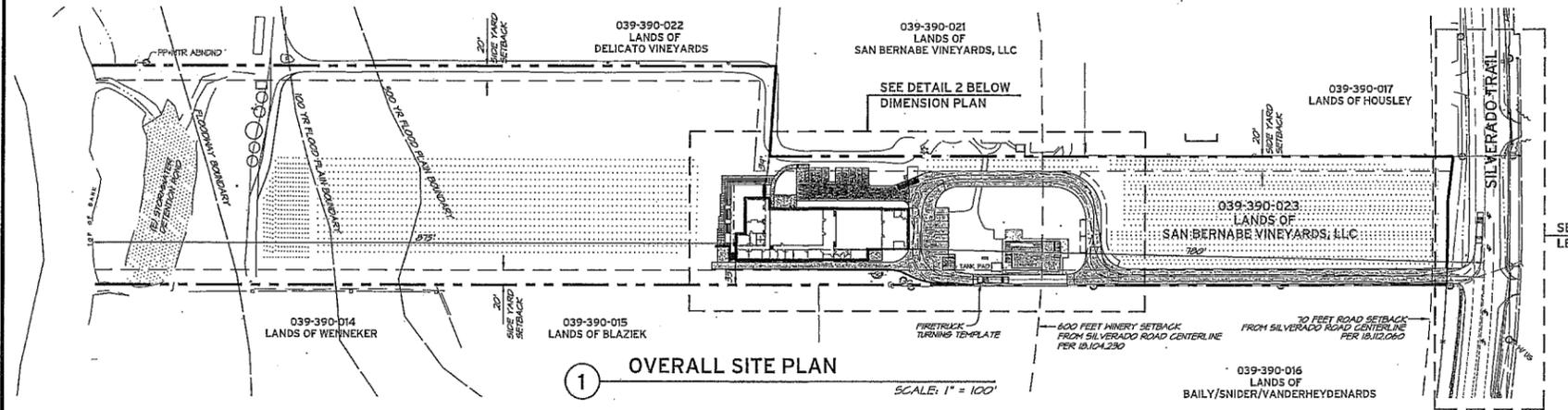
UP4	SITE PLAN, DIMENSION PLAN, LEFT TURN LANE DETAIL AND PROJECT INFORMATION
UP5	GRADINGS AND EROSION CONTROL PLAN
UP6	UTILITY PLAN
UP8	COVERAGE & DEVELOPMENT AREA

SYMBOL LEGEND

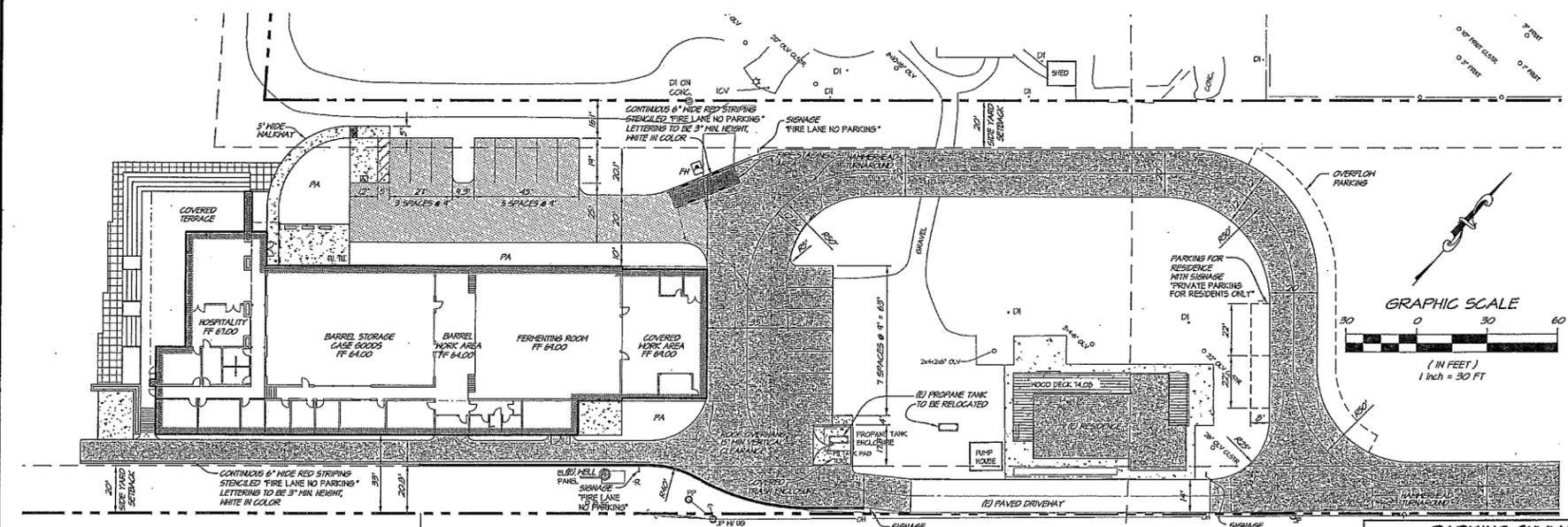
EXISTING	PROPOSED
EX SD STORM DRAIN LINE	SD STORM DRAIN LINE
EX W WATER LINE	FW FIRE MAIN
EX T TREE TO REMAIN	FL PROPERTY LINE
EX F FENCE	EX D DIRECTION OF EX. DRAINAGE
EX CL CONTOUR LINE	EX O 100-YEAR OVERLAND RELEASE PATH
EX S SPOT ELEVATION	

PARKING SUMMARY

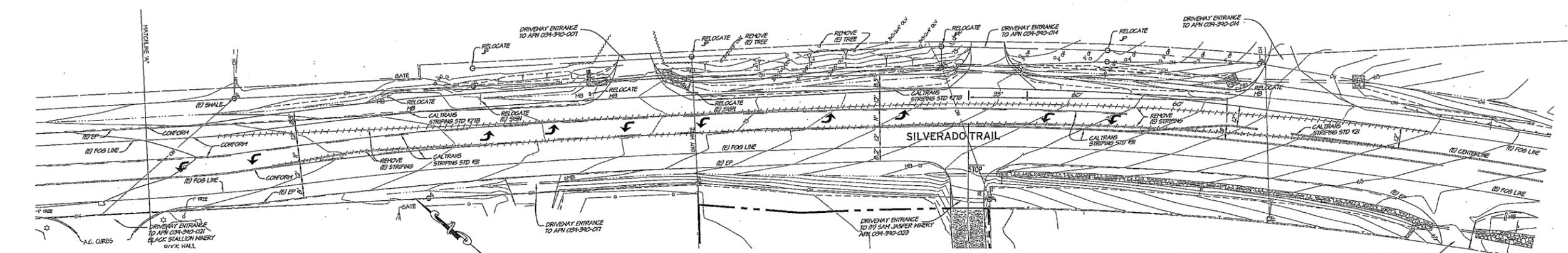
STANDARD (9'X19')	15 SPACES
VAN ACCESSIBLE (12'X19')	1 SPACES
TOTAL	16 SPACES



1 OVERALL SITE PLAN
SCALE: 1" = 100'



2 DIMENSION PLAN
SCALE: 1" = 30'



3 TWO WAY LEFT TURN LANE DETAIL
SCALE: 1" = 30'

SAM JASPER WINERY
COVER SHEET

1515 FOURTH STREET
NAPA, CALIF. 94559
OFFICE (707) 252-3301
WWW.RSACALIFORNIA.COM

RSA+

REGISTRATION NO. _____ DATE _____

NO. _____

BY _____

REVISIONS _____



DATE: 11/22/2015

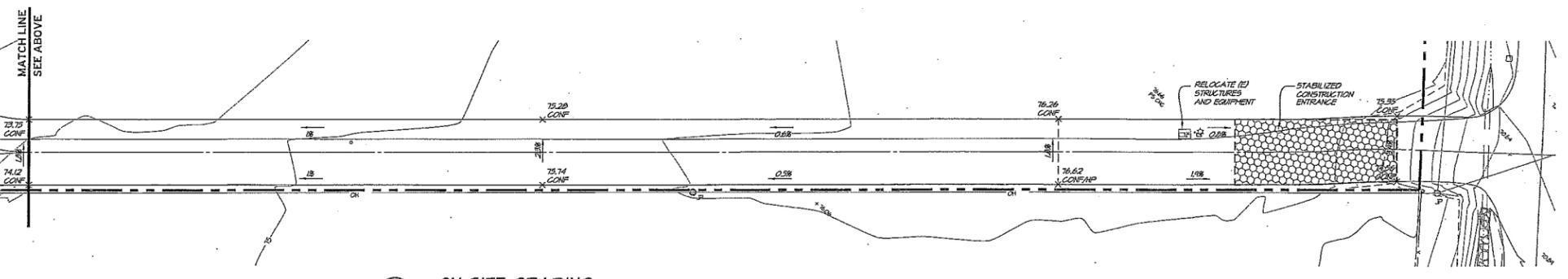
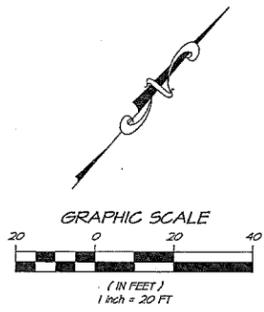
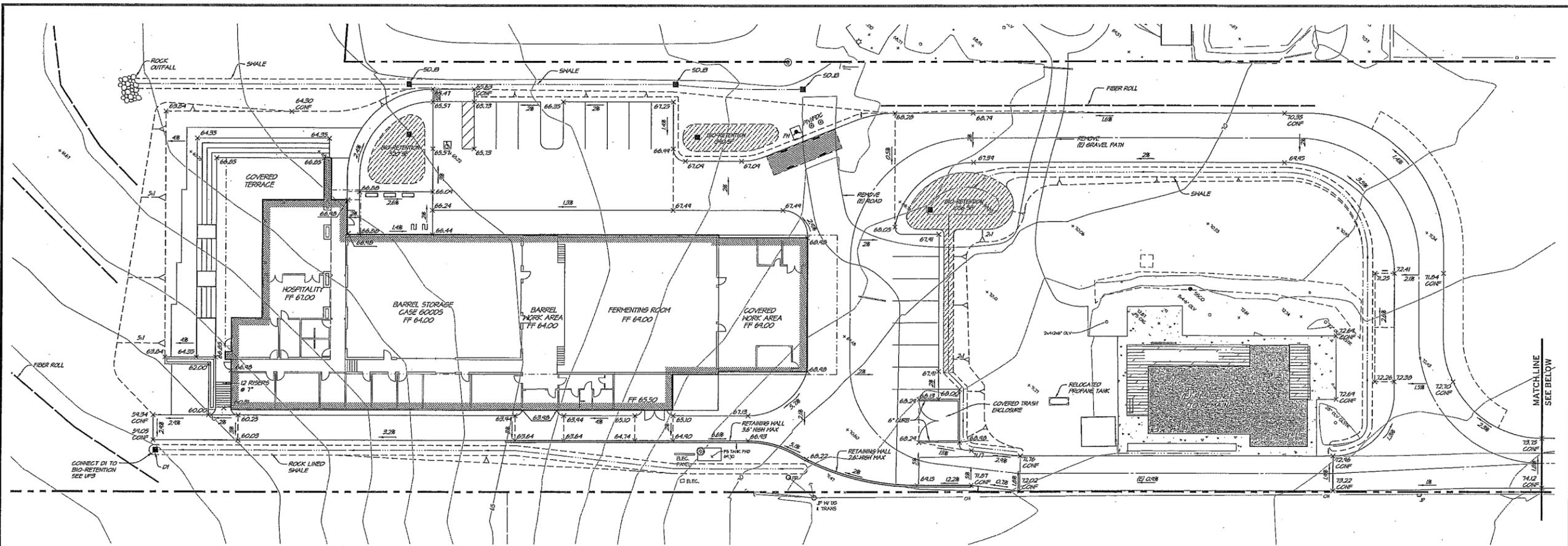
DRAWN: ECB

DESIGNED: ECB

CHECKED: BNF

JOB NO.: 411025.D

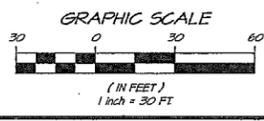
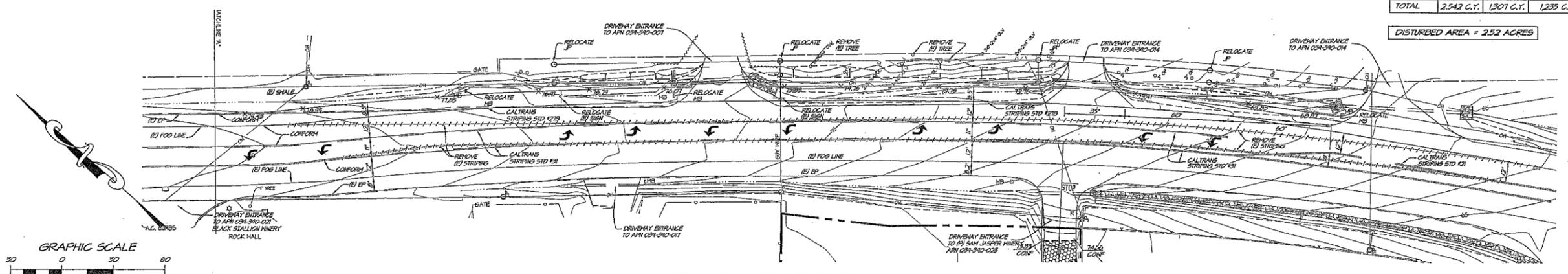
SHEET NO.: UP4
4 OF 9 SHEETS



① ON-SITE GRADING SCALE: 1" = 20'

EARTHWORK ESTIMATES		
CUT	FILL	NET
ON-SITE 2,420 C.Y.	1,271 C.Y.	
OFF-SITE 122 C.Y.	36 C.Y.	
TOTAL 2,542 C.Y.	1,307 C.Y.	1,235 C.Y. (CUT)

DISTURBED AREA = 2.52 ACRES



② OFF-SITE GRADING SCALE: 1" = 30'

NO.	DATE	REVISIONS	BY	APP'D

RSA+
 RSA+ CONSULTING CIVIL ENGINEERS - SURVEYORS + 11980
 3515 FOURTH STREET
 NAPA, CALIF. 94959
 OFFICE (707) 252-3301
 WWW.RSACALIF.COM +

SAM JASPER WINERY
GRADING AND EROSION CONTROL PLAN
 CALIFORNIA
 NAPA COUNTY



DATE	11/22/2015
DRAWN	ECB
DESIGNED	ECB
CHECKED	BNF
JOB NO.	4140210
SHEET NO.	UP5

5 OF 9 SHEETS



ATTACHMENT 3

Existing Septic System Documentation

Attention: Shelton
Company: Napa Health

Parcel: 039390005000 4059 SILVERADO TR NAP

New well, casing below
ground level
No visual concrete seal



Old well inside old pump house
Existing not been use

P & R Septic Systems

P.O. BOX 6776 • NAPA, CA 94581
 (707) 252-6866 • fax (707) 252-7544
 LIC. #482218

RECEIVED

JUL 15 2010

DEPT. OF ENVIRONMENTAL MANAGEMENT

PROPOSED SEPTIC SYSTEM REPAIR

JERRY ALEXANDER

4059 SILVERADO TRAIL - NAPA

AP# 39-390-05

July 15, 2010

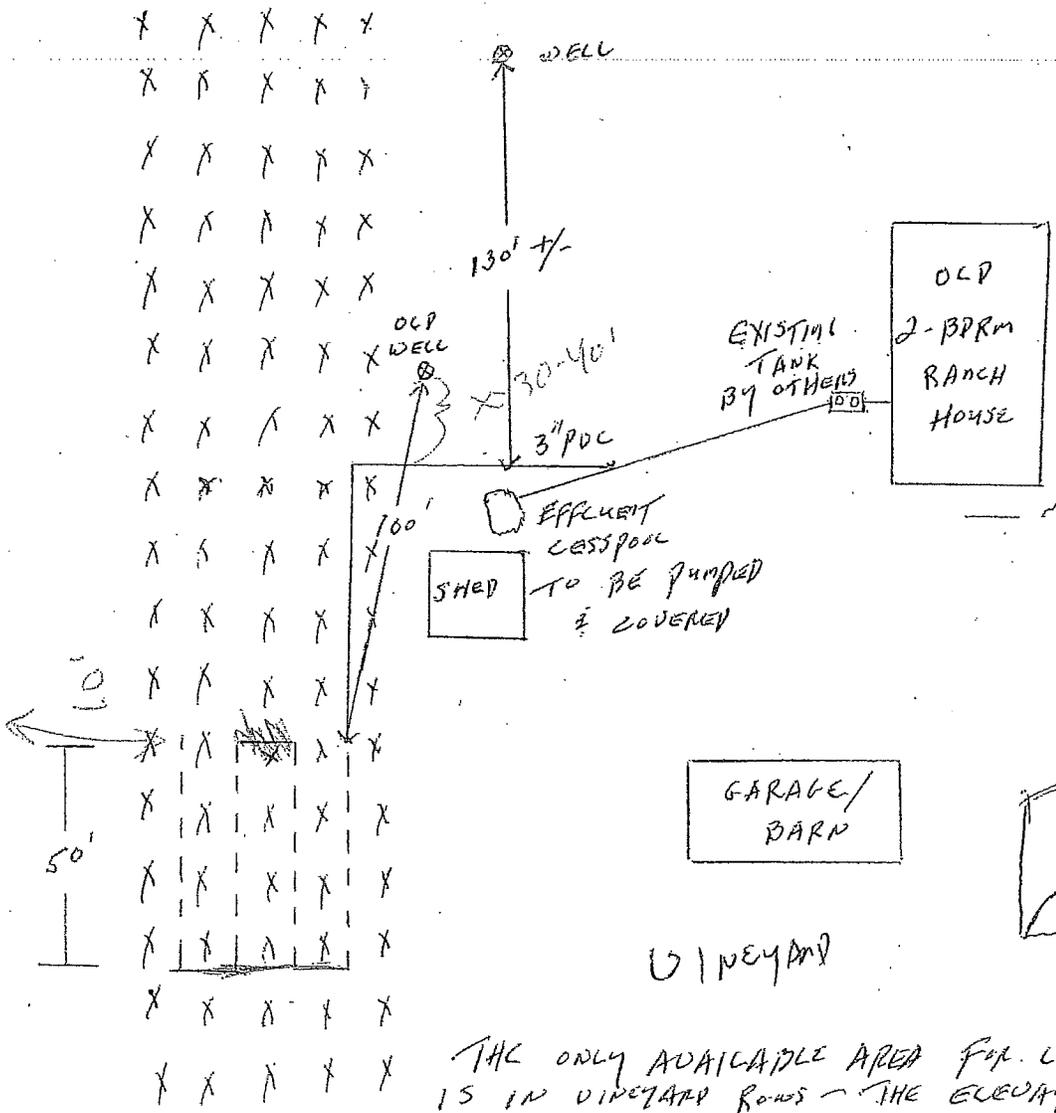
PLANS APPROVED
 County of Napa
 Dept. of Environmental Management

Ray Fisher 7/14/10

DRIVEWAY
 TO SILVERADO
 TRAIL

Trunk Line 24-35'

Property line



THE ONLY AVAILABLE AREA FOR LEACHING IS IN VINEYARD ROWS - THE ELEVATION DIFFERENCE IS 12" IN 50'

J. RIVER

N.T.S.



ATTACHMENT 4

Site Evaluation

Test Pit # 1

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-39	GR	2	SCL	S	H	FRB	SS	M/F	F/M	--
	39-48	GR	30	SCL	S	H	FRB	SS	M/M	--	--
Notes:											

Test Pit # 2

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)	
						Side Wall	Ped	Wet				
	0-36	GR	2	SCL	S	H	FRB	SS	M/F	F/M	--	
	36-40	C	30	SCL	S	H	FRB	SS	M/M	--	--	
	40"	Refusal with small excavator										
Notes:												

Test Pit # 3

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)	
						Side Wall	Ped	Wet				
	0-42	GR	2	SCL	S	H	FRB	SS	M/F	F/F	--	
	42"	Refusal with small excavator										
Notes: Small pocket of fine gravelly sandy loam												

Test Pit # 4

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-36	C	1	SCL	S	H	FRB	SS	M/F	F/F	--
	36-42	GR	30	SCL	S	SH	FRB	SS	M/C	F/F	--
	42"	Refusal with small excavator									
Notes:											

Test Pit # 5

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-38	GR	2	SCL	S	H	FRB	SS	M/F	F/F/M	--
	38-48	GR	30	SCL	S	H	FRB	SS	M/M	--	--
	47"	Refusal with backhoe - rock									
Notes:											

Test Pit # 6

X = Limiting Horizon	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	1	SCL	S	H	FRB	SS	M/F	F/M	--
	18-30	GR	20	SCL	S	SH	FRB	SS	M/M	--	--
	30-40	GR	3	SCL	S	H	FRB	SS	M/F	--	--
	40-44	GR	30	SCL	S	H	FRB	SS	M/C	--	--
	44	Refusal with backhoe									
Notes:											

Test Pit # 7

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size / Contrast)
						Side Wall	Ped	Wet			
	0-42	GR	1	SCL	S	H	FRB	SS	M/F	F/F	--
	42"	Refusal with small excavator									
Notes:											

Test Pit # 8

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size / Contrast)
						Side Wall	Ped	Wet			
	0-56	--	1	SCL	S	H	FRB	SS	M/F	F/M	--
	Ceased excavation to move to other test pit										
	Mottling below 48"										
Notes:											

Test Pit # 9

X = Limiting Horizon	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	--	1	SCL	S	H	FRB	SS	M/F	F/M	--
	24"	Ceased excavation due to irrigation line proximity									
Notes:											

Test Pit # 10

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-32	--	2	SCL	S	H	FRB	SS	M/F	M/F	--
	32"	Refusal for small excavator									
Notes:											

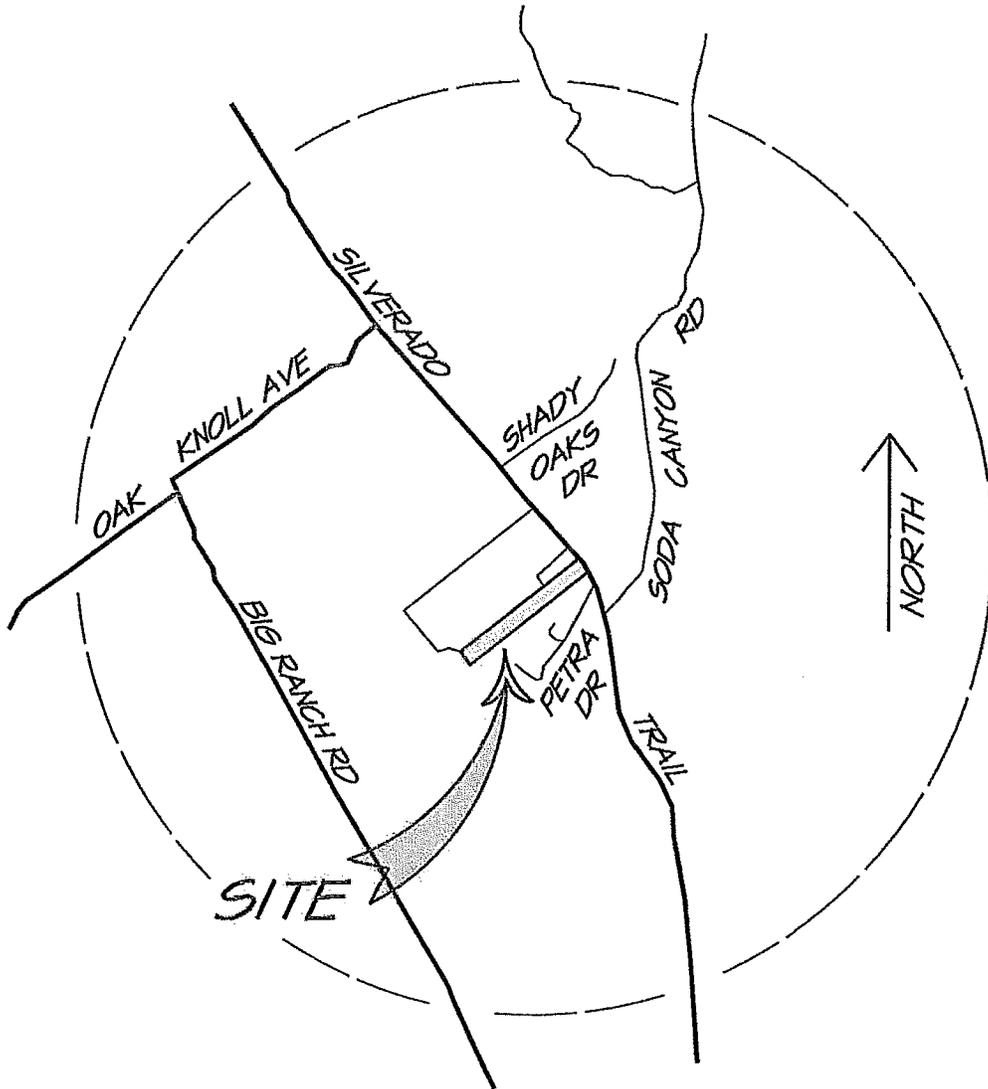
Test Pit # 11

X = Limiting Horizon	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	GR	2	SCL	S	H	FRB	SS	M/F	F/M	
	30-36	--	2	SCL	S	H	FRB	SS	M/F	--	F/F/M
	36"	Refusal with small excavator									
Notes:											

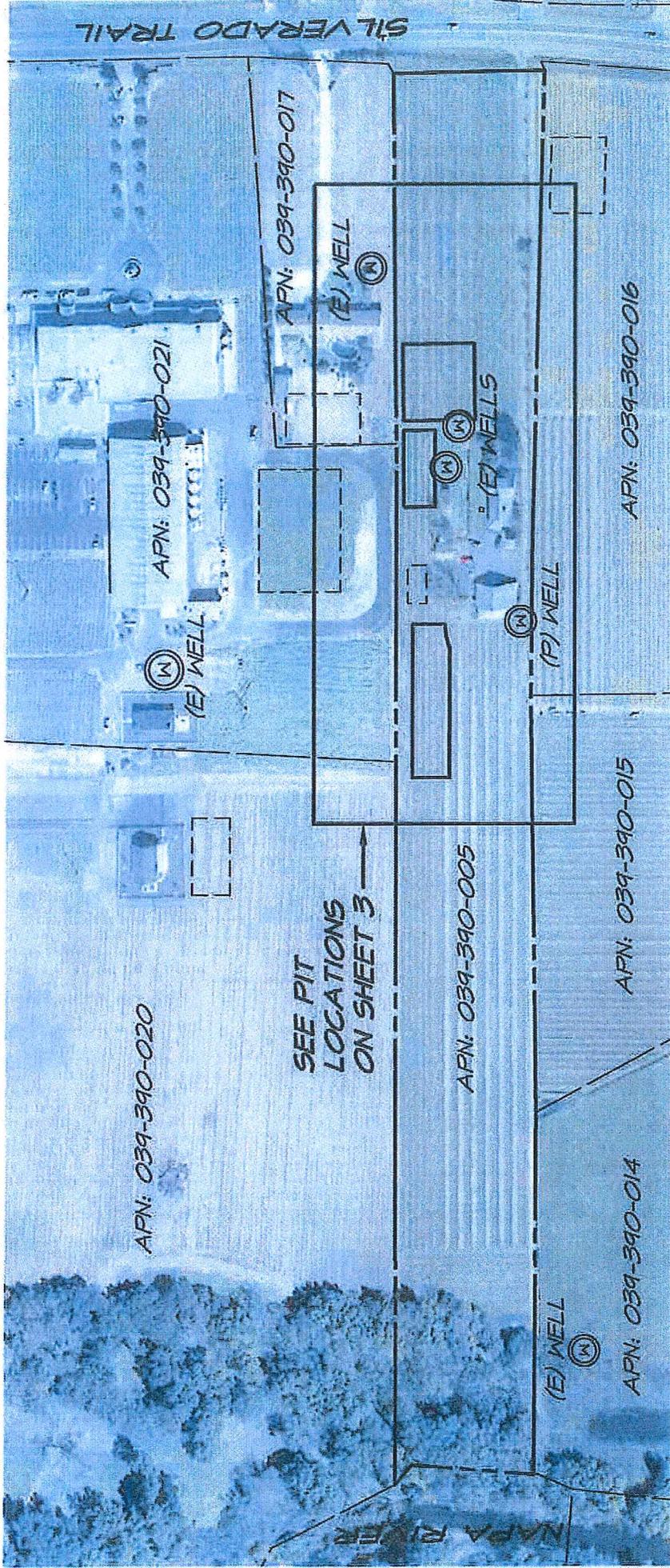
Test Pit #

X = Limiting Horizon	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
Notes: Small pocket of fine gravelly sandy loam											

ALEXANDER PROPERTY
VICINITY MAP
NAPA CALIFORNIA



**ALEXANDER PROPERTY
PIT MAP
NAPA CALIFORNIA**



SEE PIT
LOCATIONS
ON SHEET 3

GRAPHIC SCALE



(IN FEET)
1 inch = 200 FT

LEGEND

	TEST PIT
	WELL
	SETBACK
	(E) LEACH FIELD

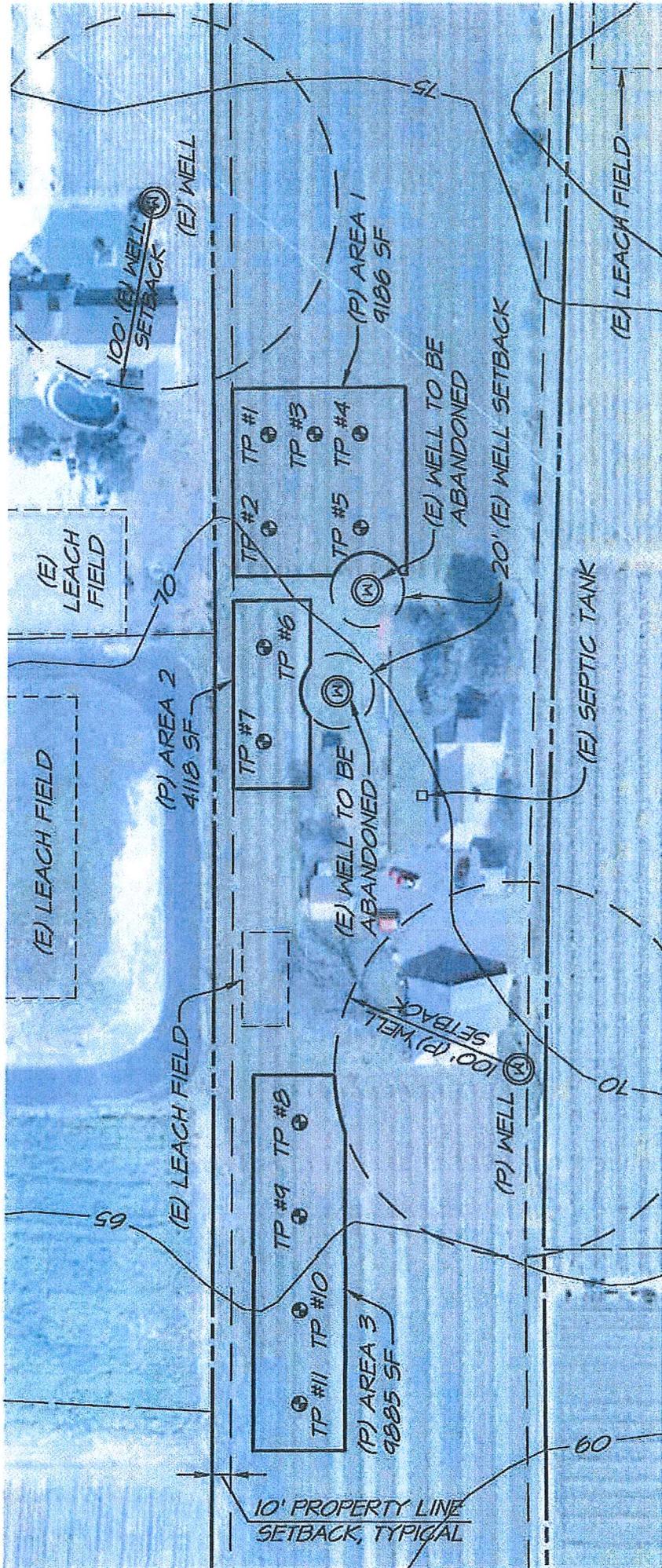
SITE EVALUATION DATE: OCTOBER 28, 2011
 APN: 039-390-005
 ADDRESS: 4059 SILVERADO TRAIL
 NAPA, CA 94558
 ENV. HEALTH INSPECTOR: PETER EX



1515 Fourth Street
 Napa, Calif. 94559
 v 707.252.3301
 f 707.252.4966

NOVEMBER 7, 2011
 4111420.0.29 pitmap.dwg 2 OF 3

ALEXANDER PROPERTY PIT MAP LOCATIONS NAPA CALIFORNIA



GRAPHIC SCALE



(IN FEET)
1 inch = 80 FT

LEGEND	
	TEST PIT
	WELL
	SETBACK
	(E) LEACH FIELD

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 411420.0.29 pitmap.dwg 3 OF 3



ATTACHMENT 5

Grease Trap Sizing

drained into the sanitary waste through the interceptor where approved by the Authority Having Jurisdiction.

1014.3.2.1 Toilets and Urinals. Toilets, urinals, and other similar fixtures shall not drain through the interceptor.

1014.3.2.2 Inlet Pipe. Waste shall enter the interceptor through the inlet pipe.

1014.3.3 Design. Gravity interceptors shall be constructed in accordance with the applicable standard in Table 1401.1 or the design approved by the Authority Having Jurisdiction.

1014.3.4 Location. Each grease interceptor shall be so installed and connected that it shall be easily accessible for inspection, cleaning, and removal of the intercepted grease. A gravity grease interceptor in accordance with IAPMO Z1001, shall not be installed in a building where food is handled. Location of the grease interceptor shall meet the approval of the Authority Having Jurisdiction.

1014.3.4.1 Interceptors. Interceptors shall be placed as close as practical to the fixtures they serve.

1014.3.4.2 Business Establishment. Each business establishment for which a gravity grease interceptor is required shall have an interceptor which shall serve that establishment unless otherwise approved by the Authority Having Jurisdiction.

1014.3.4.3 Access. Each gravity grease interceptor shall be located so as to be readily accessible to the equipment required for maintenance.

1014.3.5 Construction Requirements. Gravity grease interceptors shall be designed to remove grease from effluent and shall be sized in accordance with this section. Gravity grease interceptors shall also be designed to retain grease until accumulations can be removed by pumping the interceptor. It is recommended that a sample box be located at the outlet end of gravity grease interceptors so that the Authority Having Jurisdiction can periodically sample effluent quality.

1014.3.6 Sizing Criteria. The volume of the interceptor shall be determined by using Table 1014.3.6. Where drainage fixture units (DFUs) are not known, the interceptor shall be sized based on the maximum DFUs allowed for the pipe size connected to the inlet of the interceptor. Refer to Table 703.2, Drainage Piping, Horizontal.

1014.3.7 Abandoned Gravity Grease Interceptors. Abandoned grease interceptors shall be pumped and filled as required for abandoned sewers and sewage disposal facilities in Section 722.0.

1015.0 FOG (Fats, Oils, and Greases) Disposal System.

1015.1 Purpose. The purpose of this section is to provide the necessary criteria for the sizing, application, and installation of FOG disposal systems designated as a pretreatment or discharge water quality compliance strategy.

**TABLE 1014.3.6
GRAVITY GREASE INTERCEPTOR SIZING**

DRAINAGE FIXTURE UNITS ^{1, 3} (DFUs)	INTERCEPTOR VOLUME ² (gallons)
8	500
21	750
35	1000
90	1250
172	1500
216	2000
307	2500
342	3000
428	4000
576	5000
720	7500
2112	10 000
2640	15 000

For 1 Unit = 1 gallon = 3.785 L

Notes:

¹ The maximum allowable DFUs plumbed to the kitchen drain lines that will be connected to the grease interceptor.

² This size is based on DFUs, the pipe size from this code, Table 703.2, Useful Tables for flow in half-full pipes (ref. *Mohinder Navin Piping Handbook*, 3rd Edition, 1992). Based on 30-minute retention time (ref. George Tchobanoglous and Metcalf & Eddy, *Wastewater Engineering Treatment, Disposal and Reuse*, 3rd Ed. 1991 & Ronald Crites and George Tchobanoglous, *Small and Decentralized Wastewater Management Systems*, 1998). Rounded up to nominal interceptor volume.

³ Where the flow rate of directly connected fixtures (or appliances) have no assigned DFU values, the additional grease interceptor volume shall be based on the known flow rate (gpm) (L/s) multiplied by 30 minutes.

1015.2 Scope. FOG disposal systems shall be considered engineered systems and shall be in accordance with the requirements of Section 301.4 of this code.

1015.3 Components, Materials, and Equipment. FOG disposal systems, including components, materials, and equipment necessary for the proper function of the system, shall be in accordance with Section 301.1.2 or Section 301.2 of this code.

1015.4 Sizing Application and Installation. FOG disposal systems shall be engineered, sized, and installed in accordance with the manufacturer's installation instructions and as specified in ASME A112.14.6, as listed in Table 1401.1 of this code.

1015.5 Performance. FOG disposal systems shall be tested and certified as listed in Table 1401.1 of this code, and other national consensus standards applicable to FOG disposal systems as discharging a maximum of 5.84 grains per gallon (gr/gal) (100 mg/L) FOG.

1015.6 [OSHPD 1, 2, 3 & 4] Grease interceptors shall not be installed in food preparation area of kitchens.

1015.7 [OSHPD 1, 2, 3 & 4] Grease interceptors shall be installed outside of the kitchen area in location affording ease of maintenance and servicing.

TABLE 702.1
DRAINAGE FIXTURE UNIT VALUES (DFU)

PLUMBING APPLIANCES, APPURTENANCES, OR FIXTURES	MINIMUM SIZE TRAP AND TRAP ARM ⁷ (inches)	PRIVATE	PUBLIC	ASSEMBLY ⁸
Bathub or Combination Bath/Shower	1½	2.0	2.0	—
Bidet	1¼	1.0	—	—
Bidet	1½	2.0	—	—
Clothes Washer, domestic, standpipe ⁵	2	3.0	3.0	3.0
Dental Unit, cuspidor	1¼	—	1.0	1.0
Dishwasher, domestic, with independent drain ²	1½	2.0	2.0	2.0
Drinking Fountain or Water Cooler	1¼	0.5	0.5	1.0
Food Waste Grinder, commercial	2	—	3.0	3.0
Floor Drain, emergency	2	—	0.0	0.0
Floor Drain (for additional sizes see Section 702.0)	2	2.0	2.0	2.0
Shower, single-head trap	2	2.0	2.0	2.0
Multi-head, each additional	2	1.0	1.0	1.0
Lavatory, single	1¼	1.0	1.0	1.0
Lavatory, in sets of two or three	1½	2.0	2.0	2.0
Washfountain	1½	—	2.0	2.0
Washfountain	2	—	3.0	3.0
Mobile Home, trap ⁹	3	12.0	—	—
Receptor, indirect waste ^{1,3}	1½	—	See footnote ^{1,3}	—
Receptor, indirect waste ^{1,4}	2	—	See footnote ^{1,4}	—
Receptor, indirect waste ¹	3	—	See footnote ¹	—
Sinks	—	—	—	—
Bar	1½	1.0	—	—
Bar ²	1½	—	2.0	2.0
Clinical	3	—	6.0	6.0
Commercial with food waste ³	1½	—	3.0	3.0
Special Purpose ²	1½	2.0	3.0	3.0
Special Purpose	2	3.0	4.0	4.0
Special Purpose	3	—	6.0	6.0
Kitchen, domestic ²	—	—	—	—
(with or without food waste grinder, dishwasher, or both)	1½	2.0	2.0	—
Laundry ² (with or without discharge from a clothes washer)	1½	2.0	2.0	2.0
Service or Mop Basin	2	—	3.0	3.0
Service or Mop Basin	3	—	3.0	3.0
Service, flushing rim	3	—	6.0	6.0
Wash, each set of faucets	—	—	2.0	2.0
Urinal, integral trap 1.0 GPF ²	2	2.0	2.0	5.0
Urinal, integral trap greater than 1.0 GPF	2	2.0	2.0	6.0
Urinal, exposed trap ²	1½	2.0	2.0	5.0
Water Closet, 1.6 GPF Gravity Tank ⁶	3	3.0	4.0	6.0
Water Closet, 1.6 GPF Flushometer Tank ⁶	3	3.0	4.0	6.0
Water Closet, 1.6 GPF Flushometer Valve ⁶	3	3.0	4.0	6.0
Water Closet, greater than 1.6 GPF Gravity Tank ⁶	3	4.0	6.0	8.0
Water Closet, greater than 1.6 GPF Flushometer Valve ⁶	3	4.0	6.0	8.0

For SI units: 1 inch = 25 mm

Notes:

¹ Indirect waste receptors shall be sized based on the total drainage capacity of the fixtures that drain therein to, in accordance with Table 702.2(b).

² Provide a 2 inch (50 mm) minimum drain.

³ For refrigerators, coffee urns, water stations, and similar low demands.

⁴ For commercial sinks, dishwashers, and similar moderate or heavy demands.

⁵ Buildings having a clothes-washing area with clothes washers in a battery of three or more clothes washers shall be rated at 6 fixture units each for purposes of sizing common horizontal and vertical drainage piping.

⁶ Water closets shall be computed as 6 fixture units where determining septic tank sizes based on Appendix H of this code.

⁷ Trap sizes shall not be increased to the point where the fixture discharge is capable of being inadequate to maintain their self-scouring properties.

⁸ Assembly [Public Use] (see Table 422.1).

⁹ **[HCD 2]** For drainage fixture unit values related to mobilehome parks in all parts of the State of California, see California Code of Regulations, Title 25, Division 1, Chapter 2, Article 5, Section 1268. For drainage fixture unit values related to special occupancy parks in all parts of the State of California, see California Code of Regulations, Title 25, Division 1, Chapter 2.2, Article 5, Section 2268.



ATTACHMENT 6

Water Balance for Irrigation and Storage, Irrigation Areas Exhibit

Reclaimed Process Wastewater Water Balance for Irrigation and Storage

Project Description		Annual Process Waste Flow Volume	
Project Number:	4114025.0	Wine Production:	20,000 gal/year
Project Name:	Sam Jasper Winery		
Prepared By:	Maggie Schneider	Annual Process Waste per Gallon Wine:	5 gal/year
Date:	February 11, 2015	Total Annual Process Waste Generated:	100,000 gal/year

Vineyard Irrigation Parameters		Landscape Irrigation Parameters	
Acres of irrigated vineyard:	4.60 acres	Crop type / name:	
Row spacing:	7.0 feet	Total irrigated acres of crop:	0.00 acres
Vine spacing:	8.0 feet		
Total number of vines:	3,578 vines		
Water use per vine per month (peak):	26 gal		
Total peak monthly irrigation demand:	93,032 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]:	4,000	6,000	6,000	5,000	6,000	7,000	9,000	10,000	14,000	14,000	11,000	8,000

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)	9,697	13,697	14,115	10,812	0	0	0	0	0	0	0	1,697
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):	2	2	3	26	26	26	26	26	26	26	3	3
Total vineyard irrigation demand [gallons]:	5,582	5,582	9,303	93,032	93,032	93,032	93,032	93,032	93,032	93,032	9,303	9,303
Will vineyard be irrigated with reclaimed water this month?	n	y	y	y	y	y	y	y	y	y	y	n
Process wastewater generated this month, reclaimed for vineyard irrigation [gallons]	0	5,582	6,000	5,000	6,000	7,000	9,000	10,000	14,000	14,000	9,303	0
Remaining vineyard irrigation demand after using this month's process water [gallons]	0	0	3,303	88,032	87,032	86,032	84,032	83,032	79,032	79,032	0	0
Drawdown from storage for remaining vineyard irrigation [gallons]	0	0	3,303	10,812	0	0	0	0	0	0	0	0
Well water required to satisfy remaining vineyard irrigation demand	5,582	0	0	77,220	87,032	86,032	84,032	83,032	79,032	79,032	0	9,303
Net storage after vineyard irrigation drawdown [gallons]	9,697	13,697	10,812	0	0	0	0	0	0	0	0	1,697
This month's process wastewater, remaining after vineyard irrigation, available for landscape irrigation [gallons]	4,000	418	0	0	0	0	0	0	0	0	1,697	8,000

Water balance continues on next page for cover crop irrigation.

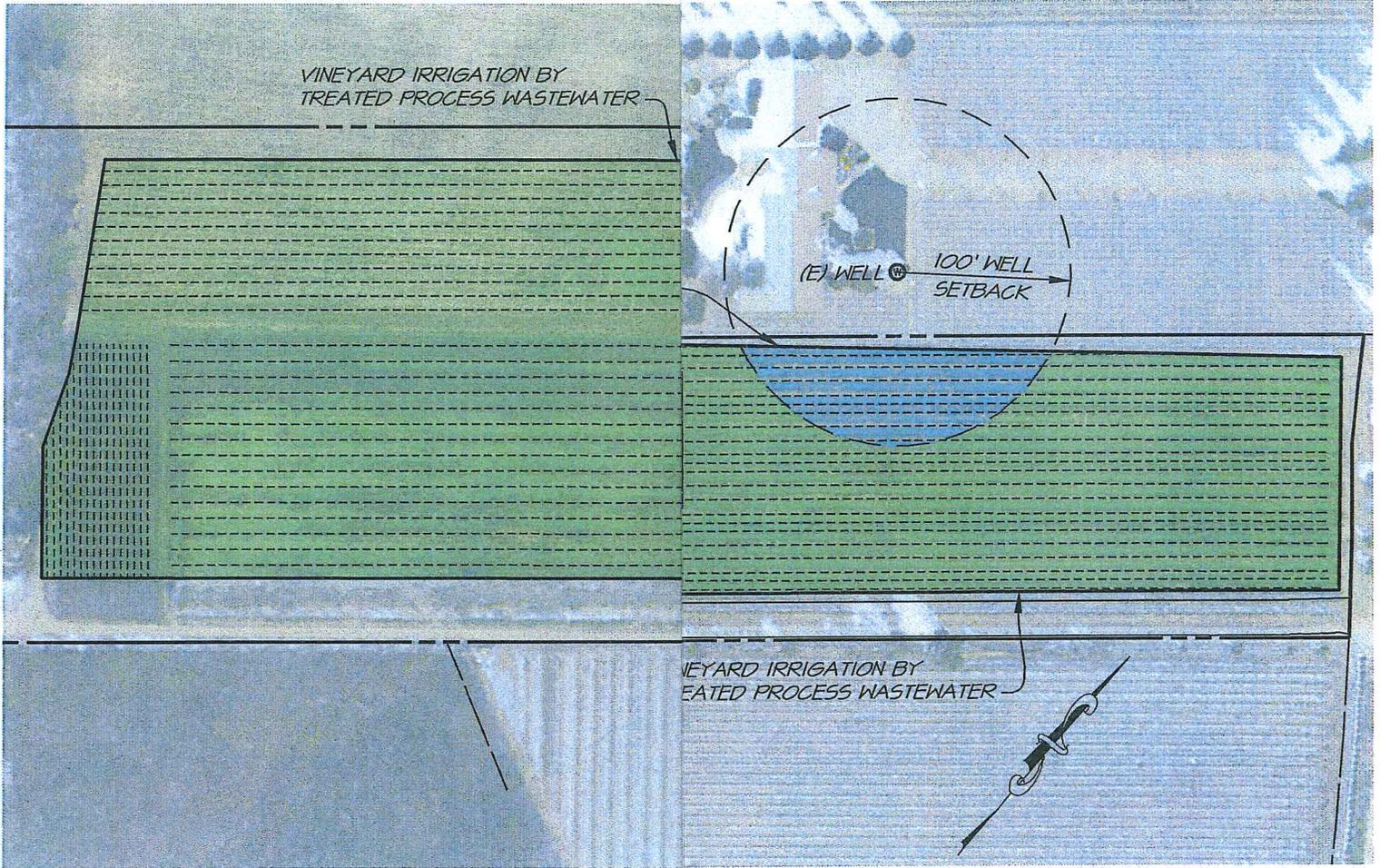
Monthly Landscape Irrigation Water Use												
(Based on evapotranspiration crop demand and irrigated area)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
This month's process wastewater, remaining after vineyard irrigation, available for landscape irrigation [gallons] (From sheet 1)	4,000	418	0	0	0	0	0	0	0	0	1,697	8,000
Reference ET (ET _o) (in/month) (see note 1)	1.03	1.53	2.93	4.71	5.82	6.85	7.21	6.44	4.87	3.53	1.64	1.17
Crop Coefficient (k _c) (see note 2)	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Crop water demand per acre [inches]	0.82	1.22	2.34	3.77	4.66	5.48	5.77	5.15	3.90	2.82	1.31	0.94
Crop water demand per acre [gallons]	22,374	33,235	63,645	102,310	126,422	148,795	156,615	139,889	105,786	76,678	35,624	25,415
Total crop water demand for irrigated area [gallons]	0	0	0	0	0	0	0	0	0	0	0	0
Will landscape be irrigated with reclaimed water this month?	Y	Y	Y	N	N	N	N	N	N	Y	Y	Y
Process wastewater remaining after vineyard irrigation, reclaimed for landscape irrigation [gallons]	0	0	0	0	0	0	0	0	0	0	0	0
Landscape irrigation water required from storage or other source [gallons]	0	0	0	0	0	0	0	0	0	0	0	0
Drawdown from storage for landscape irrigation [gallons]	0	0	0	0	0	0	0	0	0	0	0	0
Process wastewater generated this month, unused for irrigation, to be reclaimed and stored [gallons]	4,000	418	0	0	0	0	0	0	0	0	1,697	8,000
Net end-of-month reclaimed water storage after all irrigation [gallons]	13,697	14,115	10,812	0	0	0	0	0	0	0	1,697	9,697

End of Water Balance

Peak Monthly Storage = 14,115 gallons

Notes:

1. Reference ET_o 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.



GRAPHIC SCALE



(IN FEET)
1 inch = 100 FT

VINEYARD AREAS

-  VINEYARD TO RECEIVE WELL WATER IRRIGATION = 0.26 ACRE
-  VINEYARD TO RECEIVE TREATED WASTEWATER IRRIGATION = 4.6
-  TOTAL VINEYARD = 4.86 ACRES

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