

WASTEWATER FEASIBILITY STUDY

Bricoleur Vineyards

7390 / 7394 Starr Road

Windsor, California

APN 066-220-019

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PROJECT OVERVIEW

Bricoleur Vineyards, located at 7390/7394 Starr Road in Windsor, California (APN 066-220-019), has applied for a use permit modification (UPE21-0001) to increase visitation and event capacity. The existing use permit (UPE17-0053) allows for 16 event days during the year as well as private food and wine pairings for up to 15 people in the existing private tasting rooms.

The use permit modification application requests approval for 25 events per year along with an increase in the size of food and wine pairings to allow up to 30 people total at one time, utilizing the available outdoor and indoor spaces. Event sizes are discussed in more detail in subsequent sections of this report. There are no changes proposed to the number of employees or entitled wine production.

There are two existing onsite sanitary sewage (SS) treatment and disposal systems. Summit Engineering issued a Septic Findings Report (WSR22-0123, approved on August 15, 2022) to document SEP03-0981 as an existing code-compliant system and SEP18-0330 as an existing non-conforming system. The purpose of this Wastewater Feasibility Study (WWFS) is to quantify the proposed increase in SS flows based on the revised marketing plan presented in the pending use permit modification application, and to identify a feasible approach for treatment and disposal of this additional wastewater.

SANITARY SEWAGE (SS) TREATMENT AND DISPOSAL SYSTEM

OVERVIEW

There are two existing SS treatment systems at site. This WWFS focuses on SEP03-0981, as the approved Septic Findings Report concludes it is a code-compliant system with capacity to treat additional wastewater. The system includes an 810-gallon grease interceptor, a 1,500-gallon septic tank, an 810-gallon pump station, and 360 linear feet (LF) of standard leachline with 24" of gravel below the pipe. The final inspection for the system was completed in March 2005. Refer to Enclosure A for a site plan showing the location of all components of SEP03-0981. The system currently receives wastewater from an existing four-bedroom residence and an existing one-bedroom agricultural worker house. Assuming 120 gallons per bedroom, the existing system receives a total residential SS flow of 600 gallons per day (GPD).

Modifications to SEP03-0981 are proposed to accommodate the increased daily visitation and events associated with the proposed use permit modification. The modified SS system will be sized for a peak daily flow of up to 1,375 GPD of new commercial wastewater flow in addition to the 600 GPD of existing residential wastewater flow. The proposed modifications include installation of a larger septic tank, installation of new primary leachline, and identification of additional reserve area based on existing soils evaluations on file with Sonoma County. The basis for the wastewater flow rate and the proposed modifications to the existing system are discussed in greater detail in subsequent section of this WWFS.

SS CHARACTERISTICS

SS will consist primarily of wastewater generated from restrooms and tasting room facilities. Typical SS characteristics are summarized in Table 1:

Table 1: Typical SS characteristics.

Characteristic	Units	Raw SS Composition (Note 1)
Biochemical Oxygen Demand (BOD-5)	mg/L	133 - 400
Oil and Grease	mg/L	51 - 153
Total Suspended Solids (TSS)	mg/L	130 - 389
Volatile Suspended Solids	mg/L	101 - 304
Total Dissolved Solids (TDS)	mg/L	374 – 1,121
Nitrogen	mg/L	23 - 69
Nitrate	mg/L	0
Phosphorous	mg/L	3.7 - 11
Chlorides	mg/L	39 - 118
Sulfate	mg/L	24 - 72
Notes:		
1. From Metcalf & Eddy, “Wastewater Engineering, Fifth Edition”, 2014.		

SS DESIGN FLOWS

The additional SS flows at Bricoleur will consist of wastewater generated from restrooms, tasting room, and hospitality functions. The estimated peak day flows associated with the proposed increase in visitation is shown in Table 2.

Table 2: Estimate of SS generation on a day without an event.

Occupancy Type	# Employees or Visitors	Gallons/Person/Day	Total Gallons/Day
Full-Time Employees	10	15	150
Part-Time Employees	5	15	75
Tasting Visitors	100 (Note 1)	8 (Note 2)	800
Total	—	—	1,025
Notes:			
1. The pending use permit modification application requests 30 tasting visitors at one time. Sizing of the SS system assumes 100 total tasting visitors on a maximum day.			
2. Value based on discussions with Permit Sonoma in May of 2022. The allocation of 8 gal/person/day is based on a category for “wine tasting facility with meals served (multi-use utensils)” that the County is considering including in a future revision to the OWTS Manual.			

In addition to employees and tasting visitors, Bricoleur will also hold events. The size and frequency of the proposed events is summarized in Table 3.

Table 3: Proposed events at Bricoleur.

Event Type	Quantity / Year	Max. Attendees / Day
Public Agricultural Promotional & Direct Sales Events	4	250
Public Agricultural Promotional & Direct Sales Events	10	150
Private Events	4	150
Industry-Wide Events	7	150
Total	25	—

Sonoma County Policy Number 9-2-31 requires a facility with 25 annual events per year to increase the design capacity of the wastewater treatment system by 50% of the fifth largest single special event flow. Based on the events defined in Table 3, the fifth largest event includes 150 guests per day. The SS generation from events is calculated as shown in Table 4.

Table 4: SS generation from events at Bricoleur.

Occupancy Type	# Employees or Visitors	Gallons/Person/Day	Total Gallons/Day
Event Guest	75 (Note 1)	5 (Note 2)	350
Notes:			
1. The fifth largest proposed event has 150 guests. 50% of the fifth largest event is 75 guests.			
2. Value based on Sonoma County Policy Number 9-2-31, which states “special events involving food service shall size the on-site wastewater disposal system as large as needed, but in no case at less than five (5) gallons per visitor per day”.			

The design capacity for new commercial flows to the existing SS system is proposed to be the daily maximum flow calculated in Table 2 (1,025 GPD) plus the event flow calculated in Table 4 (350 GPD) for a total of 1,375 GPD. This new commercial flow rate is proposed to be treated in SEP03-0981 in addition to the existing 600 GPD residential flow to the system.

KITCHEN SS DESIGN FLOWS

Section 11.1 of the Permit Sonoma Onsite Wastewater Treatment System Regulations and Technical Standards (OWTS Manual) requires any system that receives wastewater from a commercial food service building to have a properly sized and functioning oil/grease interceptor. There is an existing 810-gallon grease interceptor that is installed upstream of the 1,500-gallon septic tank in SEP03-0981. The grease interceptor was installed under permit SEP19-0434 and the final inspection was performed by the County on May 25, 2022.

Appendix H of the Uniform Plumbing Code (UPC) provides the criteria for sizing a grease interceptor. For a commercial kitchen, the grease interceptor capacity is calculated per the formula shown below:

$$\text{Interceptor Size (Gal)} = \frac{\# \text{ Meals}}{\text{Peak Hour}} \times \text{Waste Flow Rate} \times \text{Retention Time} \times \text{Storage Factor}$$

Per the proposed use permit modification, Bricoleur is limited to 30 tasting visitors at one time. To determine the capacity of the grease interceptor, we have assumed 30 meals per peak hour and the wastewater generation rate of 8 gallons/person discussed in Table 2. The retention time for a commercial kitchen with

dishwasher, garbage disposal, or both is 2.5 hours. The storage factor for a commercial kitchen with 8 hours of operation per day is 1. Thus, the grease interceptor volume can be calculated as follows:

$$\text{Interceptor Size (Gal)} = 30 \frac{\text{meals}}{\text{hour}} \times 8 \frac{\text{gallons}}{\text{meal}} \times 2.5 \text{ hours} \times 1 = 600 \text{ gallons}$$

The existing 810-gallon grease interceptor is sized in accordance with the UPC design criteria.

SITE EVALUATION RESULTS

Percolation testing for the SEP03-0981 leachfield was performed on August 5, 2003. Refer to Enclosure B for a letter from Huffman Engineering summarizing the results of the percolation testing. Subsequent documentation from the Sonoma County Permit and Resource Management Department dated November 13, 2003 (refer to Enclosure C) notified the design consultant at the time that the site was approved for a standard system installed 42" deep with 24" of rock below pipe and instructed the design consultant to use a percolation rate of 5 minutes per inch (MPI).

SS CONVEYANCE, TREATMENT, AND DISPOSAL

Gravity Collection System

The existing gravity collection system is proposed to continue to collect SS generated from the winery and residence. The existing piping is assumed to be compatible with sanitary sewage and to satisfy Uniform Plumbing Code and Sonoma County requirements.

Grease Interceptor

Wastewater from the kitchen flows via gravity into the existing 810-gallon grease interceptor. The sizing of the grease interceptor is discussed in previous sections of this WWFS and determined to be adequate.

Septic Tank

The required septic tank volume for the increased SS flows is determined based on the design criteria provided in Section 11.1.E. of the OWTS Manual:

$$\text{Volume} = 1,125 + 0.75 \times \text{Flow Rate}$$

$$\text{Volume} = 1,125 + 0.75 \times (1,375 + 600) \text{ GPD}$$

$$\text{Volume} = 2,607 \text{ gallons}$$

Additional septic tank volume is required for treatment of the additional SS flows. Either a new tank with a total capacity of at least 1,107 gallons will be added to supplement the volume of the existing 1,500-gallon septic tank, or the existing tank will be removed and a new septic tank with a total volume of at least 2,607 gallons will be installed. An effluent filter will also be provided on the outlet of the septic tank.

Dispersal Field (Standard Leachlines)

The existing dispersal field is proposed to be expanded and additional reserve area identified to provide sufficient area for dispersal of the increased SS flows. The documentation provided in Enclosures B and C provides the basis for using a percolation rate of 5 MPI. Per Table 7.2a in version 7.0 of the County's OWTS

Manual, a percolation rate of 5 MPI corresponds to a soil loading rate of 1.086 gallons/square foot (SF)/day. The design documents for the existing system indicate the trenches have an existing sidewall area of 4 SF/LF.

The existing dispersal field is located near Pool Creek. The original design plans provided in Enclosure A identify a 100-foot setback requirement from Pool Creek to the dispersal area. While this setback is appropriate for a perennially flowing stream, a review of the current United States Geological Survey (USGS) map shows that Pool Creek is classified as an ephemeral or intermittent stream. The applicable USGS map is provided in Enclosure D. Per Table 7.2c of the OWTS manual, the required setback from an ephemeral stream to a standard dispersal area is 50 feet. This setback has been considered in the following analysis.

The estimated increase in commercial wastewater flow rate associated with the marketing plan described earlier in this WWFS is 1,375 GPD. The required lineal feet of standard leachline calculated per the requirements of OWTS Section 9.1 is shown below:

$$\text{Lineal Feet of Standard Leachline} = \text{Design Flow Rate} \div \text{Soil Loading Rate} \div \text{Trench Sidewall Area}$$

$$\text{Lineal Feet of Standard Leachline} = (1,375 \text{ GPD}) \div (1.086 \text{ gal/sf/day}) \div (4 \text{ sf/lf}) = 317 \text{ LF}$$

Commercial systems require 200% reserve area (634 LF of leachline for this system).

The system also receives 600 GPD of residential flow. The calculation of the required standard leachline length is shown below.

$$\text{Lineal Feet of Standard Leachline} = (600 \text{ GPD}) \div (1.086 \text{ gal/sf/day}) \div (4 \text{ sf/lf}) = 139 \text{ LF}$$

Residential systems require 100% reserve area (139 LF of leachline for this system).

The total leachline requirement for the modified system is summarized in Table 5. Please refer to Enclosure E for a mark-up of the dispersal area illustrating a proposed layout that would provide the required primary and reserve leachline for the Bricoleur system.

Table 5: Summary of required leachline length for modified SEP03-0981.

Wastewater Contribution	LF of Standard Leachline
Primary Area	
Commercial – Primary Leachline Required	317
Residential – Primary Leachline Required	139
Subtotal – Primary Leachline Required	456
Reserve Area	
Commercial – Reserve Leachline Required	634
Residential – Reserve Leachline Required	139
Subtotal – Reserve Leachline Required	773

The plans for the existing system identify 360 LF of installed leach line and 364 LF of reserve leach line. The proposed approach is to install 96 LF of leach line in a portion of the area currently identified as reserve to bring the total installed leach line up to 456 LF. An additional 505 LF of new reserve area has also been identified in Enclosure E. This 505 LF of reserve area combined with the remaining (364 – 96 = 268 LF) of the original reserve area provides the required total of 773 LF of reserve leach line.

OTHER CONSIDERATIONS

ODOR CONTROL

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

GROUNDWATER CONTAMINATION

No disposal of treated wastewater effluent will occur within 100 feet of any existing or proposed wells.

ALTERNATIVE COURSES OF ACTION

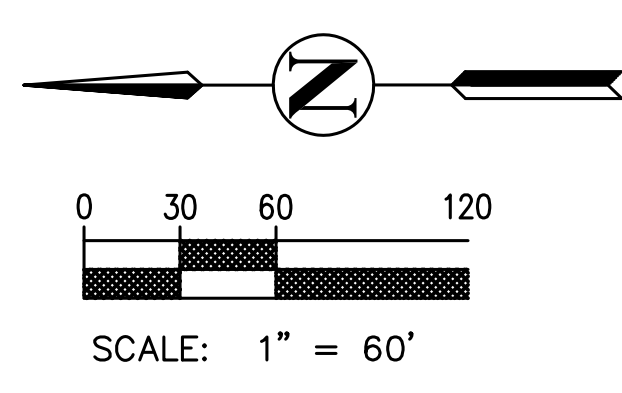
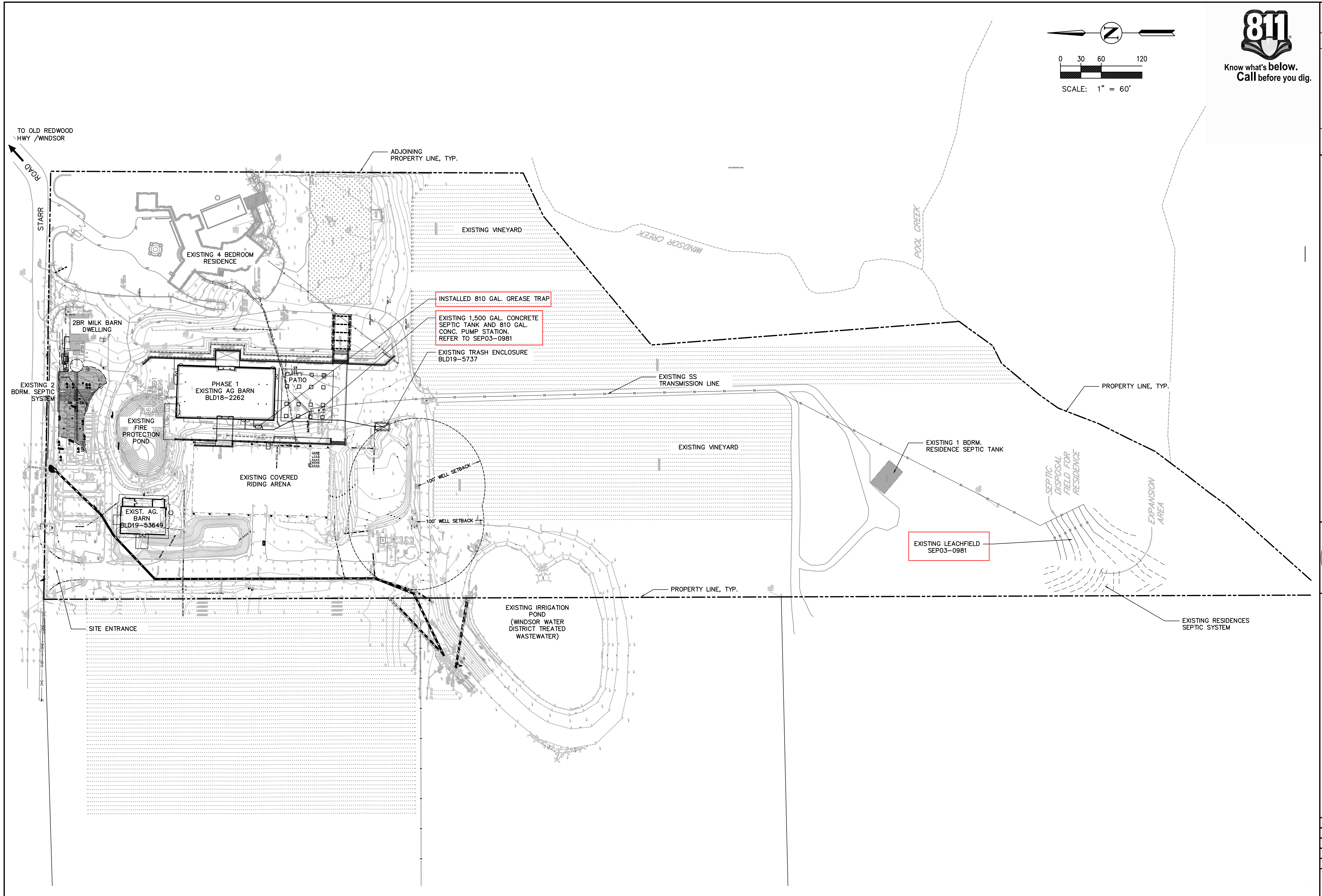
Although no operational difficulties are foreseen, the following additional courses of action would be available if necessary for the wastewater system:

- Add SS pretreatment to increase effluent quality
- Identify and use additional disposal area for the SS system

Bricoleur Vineyards
Wastewater Feasibility Study
August 31, 2022

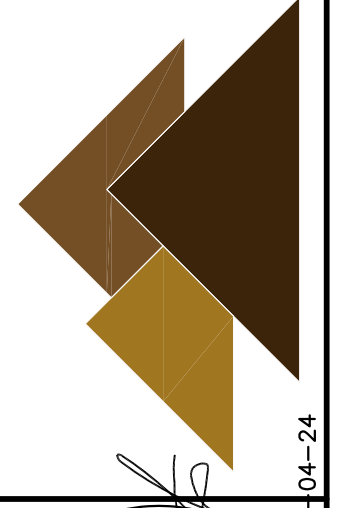
SUMMIT ENGINEERING, INC.
Project No. 2020164

ENCLOSURE A
Site Plan with Location/Layout of Septic System (SEP03-0981)



REVISION	DESCRIPTION	BY	DATE

Atterbury & Associates, Inc.
 Civil Engineering - Land Planning
 16109 Healdsburg Avenue, Suite D, Healdsburg, CA 95448
 Phone: (707) 433-0134; Fax: (707) 433-0135



2020-04-24

SITE PLAN - EXISTING CONDITIONS
 MILK BARN SEPTIC
 7390 STARR ROAD
 WINDSOR, CA

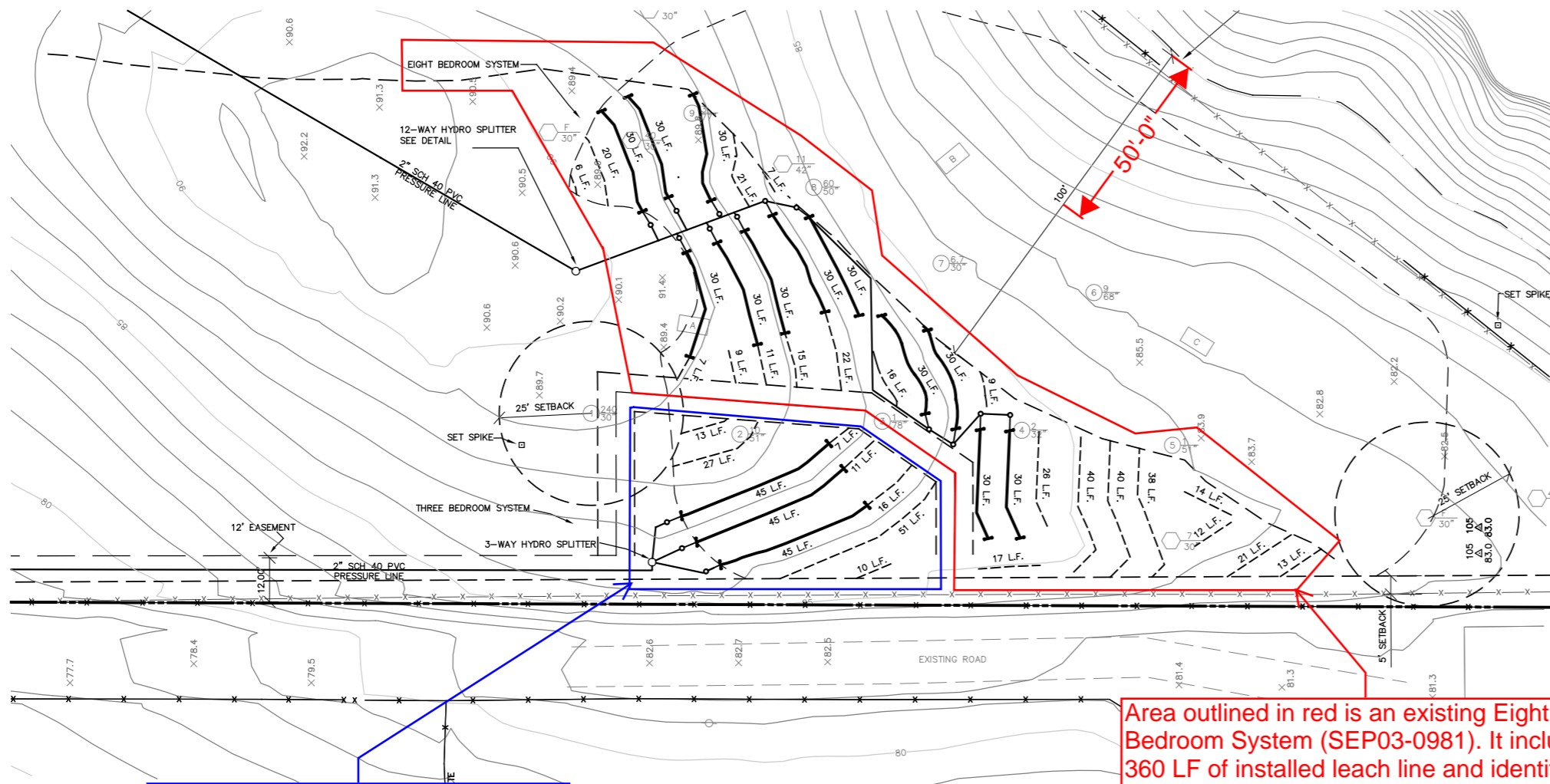
Date: 2020-04-24
 Scale: 1" = 100'
 Drawn: TA/CC
 APN: 066-220-019
 Job: 16-110
 Sheet:

S2
 2 OF 7

L:\16-110\Construction Docs\Winery Septic & Util\16-110 Winery Septic Design.dwg 4/27/2020 2:55pm

FOR REDUCED PLANS, THE ORIGINAL SCALE IS IN INCHES

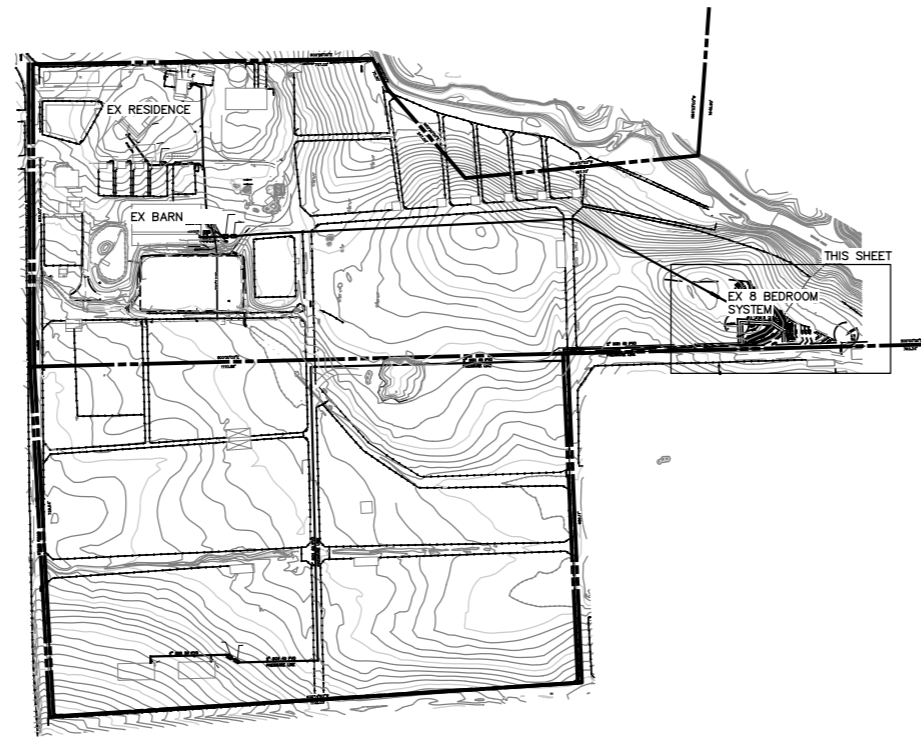
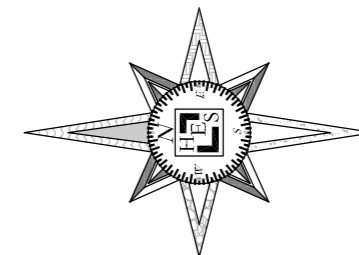
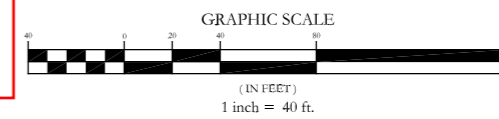
Path: V:\Proj\17-003\Draw\17-003.dwg Layout Name: --- Plot Date: January 31, 2017 at 12:30:36 PM by EJM



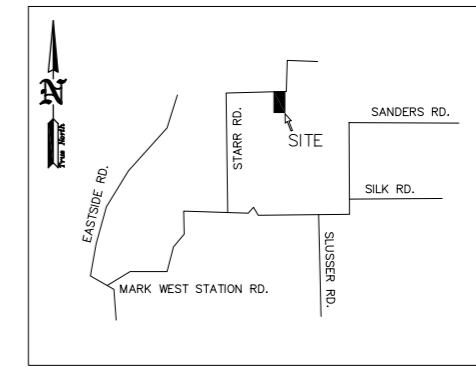
Area outlined in blue is an existing Three Bedroom System. It includes 135 LF of installed leach line and identifies location for 135 LF of reserve leach line.

Sewage Disposal System Area
Scale 1"=40'

Area outlined in red is an existing Eight Bedroom System (SEP03-0981). It includes 360 LF of installed leach line and identifies location for 364 LF of reserve leach line.



Site Map
Scale 1"=400'



Vicinity Map
N.T.S.

Huffman Engineering & Surveying
537 College Avenue, Suite A
Santa Rosa, Ca. 95404
P: (707) 542-6559
www.huffmanengineering.net

REVISIONS	
#	Date

Engineer: Robb Huffman P.E. 42293

LANDS OF STARR HOLDINGS, LLC
8 BEDROOM SEWAGE DISPOSAL SYSTEM
7390 STARR ROAD
WINDSOR, CALIFORNIA
A.P.N.: 066-220-019

Date: 01/30/17	Scale: 1" = 40'
File: 17-003	Sheet
Draw: EJM	1
Job: 17-003	Of 1 Sheets

Bricoleur Vineyards
Wastewater Feasibility Study
August 31, 2022

SUMMIT ENGINEERING, INC.
Project No. 2020164

ENCLOSURE B
Soils Evaluation for SEP03-0981

HE HUFFMAN ENGINEERING

August 18, 2003

Sonoma County Permit and Resource Management
Environmental Health Division
2550 Ventura Avenue
Santa Rosa, California 95403

Attn.: Wiles Edison

Re: Percolation testing for 7390 Starr Road, Windsor

Dear Wiles,

Percolation testing was conducted on the above-mentioned address for the purpose of constructing a home and a commercial riding arena.

Description of Site:

The site is located at the southern portion of the property. There is a perennial creek located to the south and east of the tested area. The area is a pasture for horses and cows. There are two trees in the pasture area and many oaks and dense vegetation outside the pasture area. The soil types are Sandy Loam and Loamy Sand.

Test Results:

We viewed and logged three profile holes labeled A to C on the property. The following percolation tests were performed on 8/5/03 for a possible filled land system.

Percolation Hole #	Depth (In.)	Rate (M.P.I.)
2	42	10
4	30	2
5	42	1.0
7	30	6.7
8	42	60

The average percolation rate is 15.9 minutes per inch.

Percolation Hole #	Depth (In.)	Rate (M.P.I.)
3	78	1.0
6	78	9.0
9	78	3.0

The average percolation rate is 4.3 minutes per inch.

The average percolation rate for all perc holes is 11.6 MPI.

Recommendations:

Shallow Standard: The following is recommended for the primary and reserve leach field:

System Type	Shallow standard
Gravel below pipe (in.)	24
Soil application rate (Lf/bdrm)	70
Total depth of leach lines (in.)	42

The following are restrictions:

- A. Maintain 100' setback to the creek.
- B. Maintain 25' setback from percolation test hole #1.
- C. Maintain 5' setback to property lines.

We viewed and logged the profile holes, witnessed and reviewed the percolation data. We have determined that they are true, accurate and indicative of the site for an on-site sewage disposal system as measured by the current standards of the Sonoma County Permit and Resource Management Department, Well and Septic Division.

If you have any questions, please call us at 823-2190.

Sincerely,



Rob Huffman, PE
Professional Civil Engineer

RH:fv: enc.
03-21 perc

SONOMA COUNTY
 PERMIT & RESOURCE MANAGEMENT DEPARTMENT
 WELL & SEPTIC SECTION
 2550 VENTURA AVE.
 SANTA ROSA, CA 95403

Soil Percolation Test Data

Address of Percolation Test: <i>7390 Starr Rd</i>		A.P. Number: <i>066-220-019</i>	Winter Groundwater Test:	Wet Weather Perc:
Owner's Name: <i>Jill Anderson</i>		Field Check: Yes No By: Date: Time:		
Owner's Mailing Address: <i>7390 Starr Rd.</i>		Review of Data: Rates Acceptable: Yes No		
City/State/Zip Code: <i>Windsor CA</i>	Telephone Number: <i>(707) 829-0253</i>	Remarks:		Receipt Information
Water Supply: Private Public	Lot or Parcel Size:			
Test Conducted By: <i>07</i> <i>Huffman Engineering</i>	Telephone Number: <i>(707) 823-2190</i>			
Address/City/State/Zip Code: <i>876 Gravenstein Hwy S. Sebastopol</i>				

Type of Soil:	Date of Test: <i>8/5/03</i>	Circle One: Initial Test Supplemental	Sanitarian: <i>James Johnson</i>
---------------	--------------------------------	--	-------------------------------------

Hole No.	Depth of Hole	Pipe Length	Presoak Remaining	Start		First Measurement		Second Measurement		Third Measurement		Fourth Measurement		Fifth Measurement		Sixth Measurement		RATE
				Time	Inches	Time	Inches	Time	Inches	Time	Inches	Time	Inches	Time	Inches	Time	Inches	
1	30	25		10	13	11	15 ⁶	12	16 ²	1	16 ⁶	2	17	3	17 ²	4	17 ⁴	240
2	51	24 ⁴		10	12 ⁴	11	22 ⁷	12	D		10 min							
3	78	24		10	12	11	D	12	D	1	D	10 min						
4	32	24 ⁵		10	12 ⁵	11	D	12	D	1	D	10 min						
5	51	23 ⁷		10	11 ⁷	11	T	12	D	1	D	10 min						
6	68	22 ⁴		10	10 ⁴	11	D	12	D	1	D	10 min						
7	30	22 ⁴		10	10 ⁴	11	D	12	21 ¹	1	T	2	22 ²	3	19 ⁴	4	D	6.7
8	50	24 ⁵		10	12 ⁵	11	16 ¹	12	17 ⁷	1	18 ⁷	2	19 ⁵	3	20 ¹	4	20 ⁵	60
9	77	22 ⁶		10	10 ⁶	11	D	12	D		10 min							

▲ indicates refill

Huffman Engineering
876 Gravenstein Hwy. South, Sebastopol, CA 95472

Date: 7/21/03		Job# 03-21	
Name: Anderson, Jill	Address: 7390 Starr Road	Pit# A	Slope
Depth: 0" - 22" Color/Chip: 10 yr 4/3 Texture: Loam Structure: strong Shape: Consistence: slightly hard, hard slightly sticky, slightly plastic Roots: Pores: man, coarse, >2.5mm Boundary: Clear	Comments: OK for std @ 30" & 42"		
Depth: 22" - 96" Color/Chip: 10 yr 5/3 Texture: Sandy clay loam Structure: moderate Shape: Consistence: friable slightly sticky, slightly plastic Roots: fine, few <10 Pores: Boundary: bottom	Comments:		
Depth: Color/Chip: Texture: Structure: Shape: Consistence: Roots: Pores: Boundary:	Comments:		
Depth: Color/Chip: Texture: Structure: Shape: Consistence: Roots: Pores: Boundary:	Comments:		

Date: 7/21/03		Job# 03-21		
Name: Anderson, Jill	Address: 7390 Starr Road	Pit# B	Slope 9%	
Depth: 0" - 44"	Color/Chip: 10 yr 2/1	Texture: Loam	Comments:	
Structure:	Shape:	Consistence: so nonsticky, nonplastic		
Roots:	Pores:	Boundary:		
Depth: 44" - 77"	Color/Chip: 10 yr 4/3	Texture: Loam		Comments:
Structure: strong	Shape:	Consistence:		
Roots: medium, few <1	Pores:	Boundary:		
Depth: 77" - 102"	Color/Chip: 10 yr 4/3	Texture:		
Structure:	Shape:	Consistence:		
Roots:	Pores:	Boundary: bottom		
Depth:	Color/Chip:	Texture:	Comments:	
Structure:	Shape:	Consistence:		
Roots:	Pores:	Boundary:		

Date: 7/21/03 Job# 03-21			
Name:	Anderson, Jill	Address:	7390 Starr Road
Pit#	C	Slope	
Depth: 0" - 20" Color/Chip: 10 yr 2/1 Texture: Loam Structure: strong Shape: Consistence: Roots: Pores: many, coarse >2.5 Boundary: Clear	Comments: Test for mound if soil OK @ 24" Ok for standard if soil @ 42" is ok.		
Depth: 20" - 30" Color/Chip: 10 yr 4/3 Texture: Sandy loam, loam Structure: Shape: granular Consistence: moist, very friable slightly sticky, slightly plastic Roots: Pores: Boundary: Clear	Comments:		
Depth: 30" - 98" Color/Chip: 10 yr 5/2 Gravelly: Very, 35%-65%, 3/4" 1 1/2" Texture: Sandy clay loam, sandy clay Shape: granular Consistence: moist, friable slightly sticky, slightly plastic Roots: Pores: Boundary: bottom	Comments:		
Depth: Color/Chip: Texture: Structure: Shape: Consistence: Roots: Pores: Boundary:	Comments:		

Bricoleur Vineyards
Wastewater Feasibility Study
August 31, 2022

SUMMIT ENGINEERING, INC.
Project No. 2020164

ENCLOSURE C
Sonoma County Design Guidance for SEP03-0981



COUNTY OF SONOMA PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 565-1900 FAX (707) 565-1103

Subject: **Soils Evaluation for On-Site Sewage Disposal Purposes**

Rob Huffman
876 Gravenstein Hwy
Sebastopol, CA 95472

Date: 11-13-03

7390 Starr Rd
Site Address:

066-220-019
Assessor's Parcel Number

Property Owner:

SEV03-0990
Site I.D. # Subdivision # Lot #:

Your soils evaluation for the subject property has been reviewed and filed. Review of the data indicates potential for the following type of sewage disposal system:

Standard system 42 inches deep w/ 24" rock
based on perc holes 2-7, avg mpi = 5 sized at: 45 LF/BR

Design by a Registered Environmental Health Specialist or Registered Civil Engineer is required.

Complete topographic map of site is necessary.

The following critical design elements need to be observed. Final approval cannot be given until these have been addressed:

Avoid holes 1, 8, 9
Submit redesign based on 5 mpi perc rate

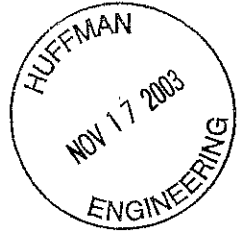
The sewage disposal capability of the site is dependent upon topography and setbacks. The acceptable sewage discharge volume (i.e., number of bedrooms in a dwelling) will be based upon the final sewage disposal system design.

Construction of the septic system cannot occur until plans have been approved and a permit has been issued by our office. **All septic systems must comply with standards in effect at the time of permit application.**

For further information, please feel free to contact the undersigned at (707) 565-1677 between 7:30 & 9:00 a.m.

Very truly yours,

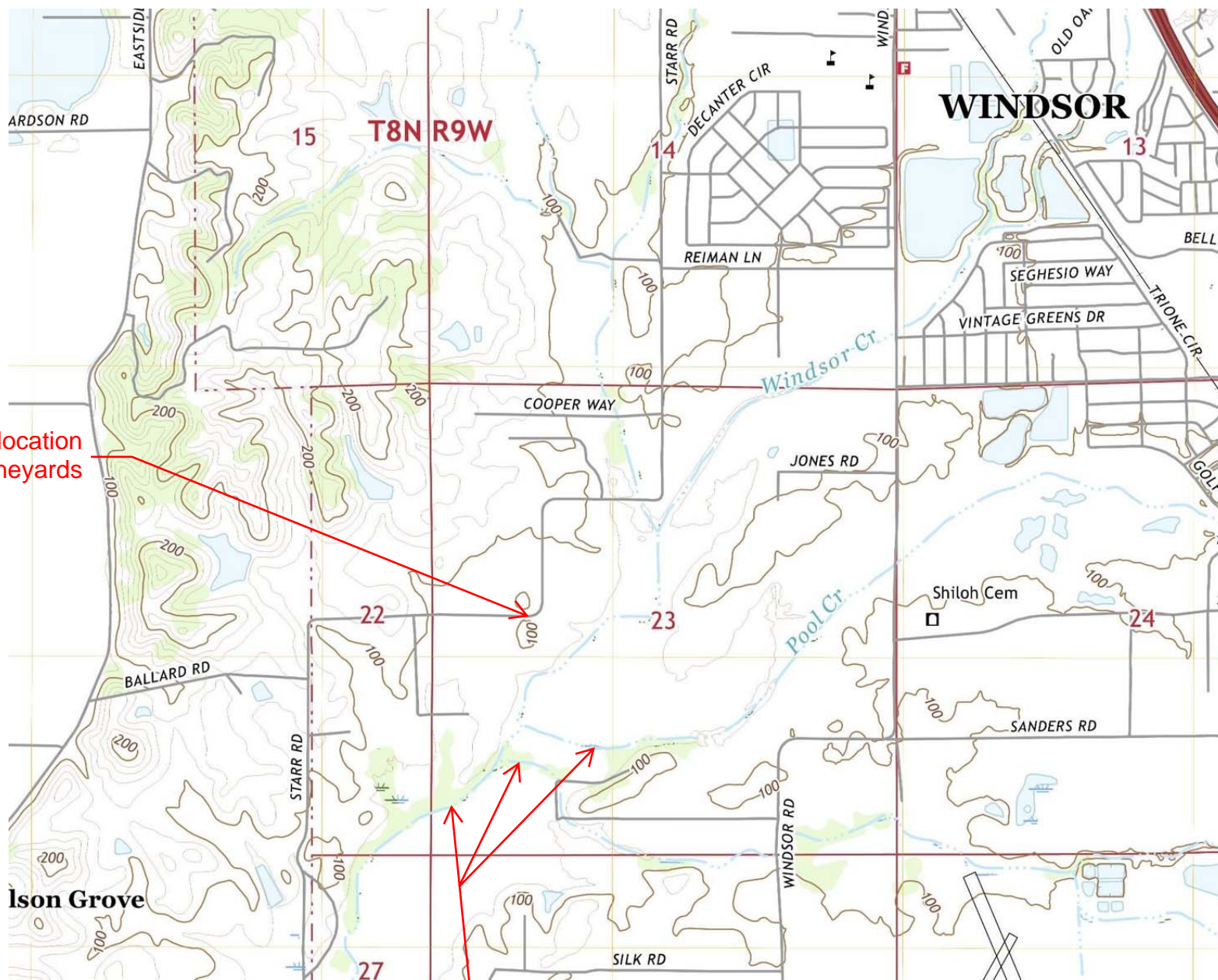
James A. Johnson
District Environmental Health Specialist



Bricoleur Vineyards
Wastewater Feasibility Study
August 31, 2022

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Project No. 2020164

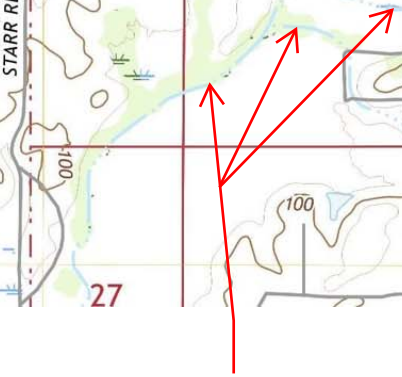
ENCLOSURE D
USGS Map of Streams Near Bricoleur



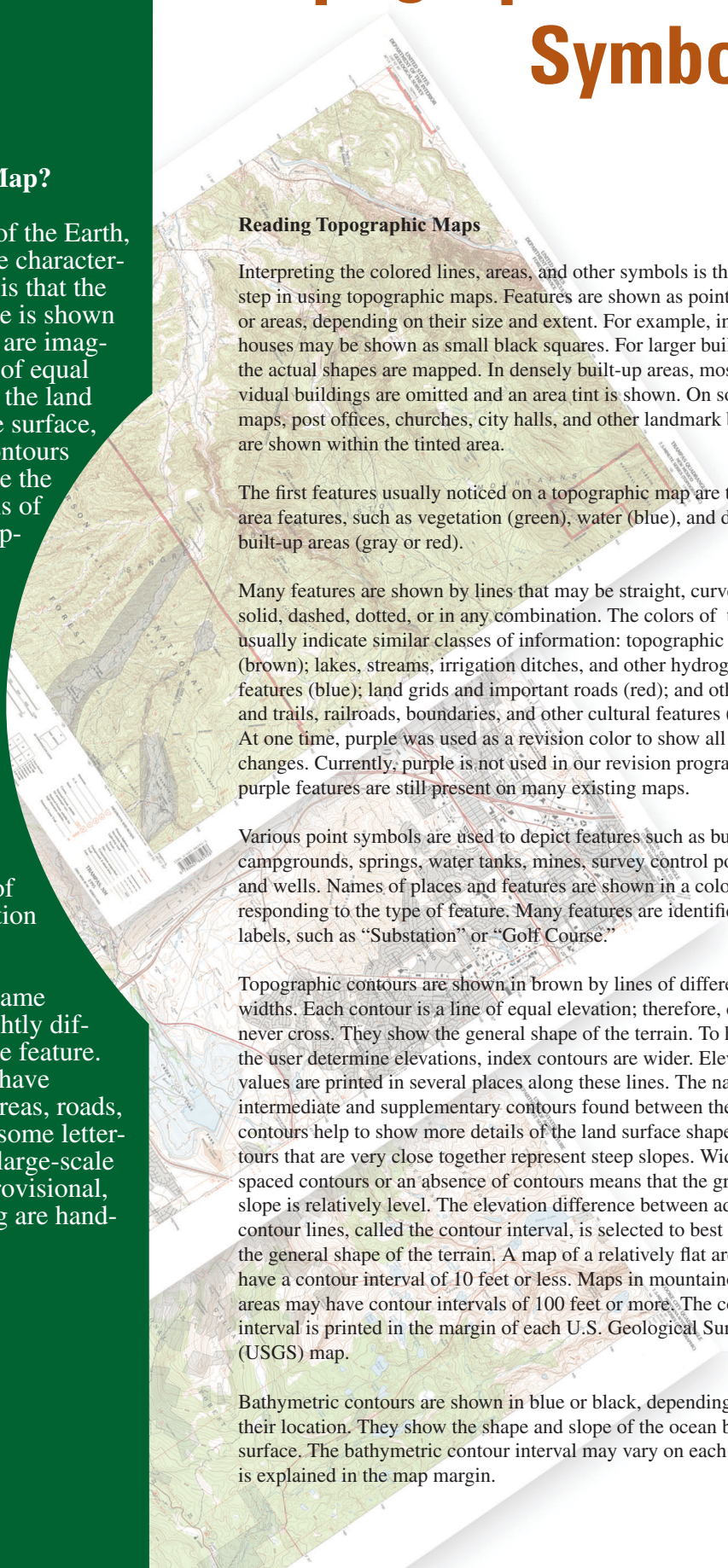
Approximate location of Bricoleur Vineyards



Ephemeral Stream (typ)



Topographic Map Symbols



What is a Topographic Map?

A map is a representation of the Earth, or part of it. The distinctive characteristic of a topographic map is that the shape of the Earth's surface is shown by contour lines. Contours are imaginary lines that join points of equal elevation on the surface of the land above or below a reference surface, such as mean sea level. Contours make it possible to measure the height of mountains, depths of the ocean bottom, and steepness of slopes.

A topographic map shows more than contours. The map includes symbols that represent such features as streets, buildings, streams, and vegetation. These symbols are constantly refined to better relate to the features they represent, improve the appearance or readability of the map, or reduce production cost.

Consequently, within the same series, maps may have slightly different symbols for the same feature. Examples of symbols that have changed include built-up areas, roads, intermittent drainage, and some lettering styles. On one type of large-scale topographic map, called provisional, some symbols and lettering are hand-drawn.

Reading Topographic Maps

Interpreting the colored lines, areas, and other symbols is the first step in using topographic maps. Features are shown as points, lines, or areas, depending on their size and extent. For example, individual houses may be shown as small black squares. For larger buildings, the actual shapes are mapped. In densely built-up areas, most individual buildings are omitted and an area tint is shown. On some maps, post offices, churches, city halls, and other landmark buildings are shown within the tinted area.

The first features usually noticed on a topographic map are the area features, such as vegetation (green), water (blue), and densely built-up areas (gray or red).

Many features are shown by lines that may be straight, curved, solid, dashed, dotted, or in any combination. The colors of the lines usually indicate similar classes of information: topographic contours (brown); lakes, streams, irrigation ditches, and other hydrographic features (blue); land grids and important roads (red); and other roads and trails, railroads, boundaries, and other cultural features (black). At one time, purple was used as a revision color to show all feature changes. Currently, purple is not used in our revision program, but purple features are still present on many existing maps.

Various point symbols are used to depict features such as buildings, campgrounds, springs, water tanks, mines, survey control points, and wells. Names of places and features are shown in a color corresponding to the type of feature. Many features are identified by labels, such as "Substation" or "Golf Course."

Topographic contours are shown in brown by lines of different widths. Each contour is a line of equal elevation; therefore, contours never cross. They show the general shape of the terrain. To help the user determine elevations, index contours are wider. Elevation values are printed in several places along these lines. The narrower intermediate and supplementary contours found between the index contours help to show more details of the land surface shape. Contours that are very close together represent steep slopes. Widely spaced contours or an absence of contours means that the ground slope is relatively level. The elevation difference between adjacent contour lines, called the contour interval, is selected to best show the general shape of the terrain. A map of a relatively flat area may have a contour interval of 10 feet or less. Maps in mountainous areas may have contour intervals of 100 feet or more. The contour interval is printed in the margin of each U.S. Geological Survey (USGS) map.

Bathymetric contours are shown in blue or black, depending on their location. They show the shape and slope of the ocean bottom surface. The bathymetric contour interval may vary on each map and is explained in the map margin.

BATHYMETRIC FEATURES

Area exposed at mean low tide; sounding datum line***	
Channel***	
Sunken rock***	

BOUNDARIES

National	
State or territorial	
County or equivalent	
Civil township or equivalent	
Incorporated city or equivalent	
Federally administered park, reservation, or monument (external)	
Federally administered park, reservation, or monument (internal)	
State forest, park, reservation, or monument and large county park	
Forest Service administrative area*	
Forest Service ranger district*	
National Forest System land status, Forest Service lands*	
National Forest System land status, non-Forest Service lands*	
Small park (county or city)	

BUILDINGS AND RELATED FEATURES

Building	
School; house of worship	
Athletic field	
Built-up area	
Forest headquarters*	
Ranger district office*	
Guard station or work center*	
Racetrack or raceway	
Airport, paved landing strip, runway, taxiway, or apron	
Unpaved landing strip	
Well (other than water), windmill or wind generator	
Tanks	
Covered reservoir	
Gaging station	
Located or landmark object (feature as labeled)	
Boat ramp or boat access*	
Roadside park or rest area	
Picnic area	
Campground	
Winter recreation area*	
Cemetery	

COASTAL FEATURES

Foreshore flat	
Coral or rock reef	
Rock, bare or awash; dangerous to navigation	
Group of rocks, bare or awash	
Exposed wreck	
Depth curve; sounding	
Breakwater, pier, jetty, or wharf	
Seawall	
Oil or gas well; platform	

CONTOURS

Topographic

Index	
Approximate or indefinite	
Intermediate	
Approximate or indefinite	
Supplementary	
Depression	
Cut	
Fill	
Continental divide	

Bathymetric

Index***	
Intermediate***	
Index primary***	
Primary***	
Supplementary***	

CONTROL DATA AND MONUMENTS

Principal point**	
U.S. mineral or location monument	
River mileage marker	
Boundary monument	
Third-order or better elevation, with tablet	
Third-order or better elevation, recoverable mark, no tablet	
With number and elevation	
Horizontal control	
Third-order or better, permanent mark	
With third-order or better elevation	
With checked spot elevation	
Coincident with found section corner	
Unmonumented**	

CONTROL DATA AND MONUMENTS – *continued*

Vertical control

Third-order or better elevation, with tablet	BM × 5280
Third-order or better elevation, recoverable mark, no tablet	× 528
Bench mark coincident with found section corner	BM + 5280
Spot elevation	× 7523

GLACIERS AND PERMANENT SNOWFIELDS

Contours and limits	
Formlines	
Glacial advance	
Glacial retreat	

LAND SURVEYS

Public land survey system

Range or Township line	—————
Location approximate	- - - - -
Location doubtful	- · - · -
Protracted	- · - · - · - · -
Protracted (AK 1:63,360-scale)	—————
Range or Township labels	R1E T2N R3W T4S
Section line	—————
Location approximate	- - - - -
Location doubtful	- · - · -
Protracted	- · - · - · - · -
Protracted (AK 1:63,360-scale)	—————
Section numbers	1 - 36 1 - 36
Found section corner	+
Found closing corner	+
Witness corner	WC
Meander corner	MC
Weak corner*	+

Other land surveys

Range or Township line	·····
Section line	·····
Land grant, mining claim, donation land claim, or tract	— · — · — · — · —
Land grant, homestead, mineral, or other special survey monument	□
Fence or field lines	- - - - -

MARINE SHORELINES

Shoreline	
Apparent (edge of vegetation)***	
Indefinite or unsurveyed	

MINES AND CAVES

Quarry or open pit mine	×
Gravel, sand, clay, or borrow pit	×
Mine tunnel or cave entrance	←
Mine shaft	■
Prospect	x
Tailings	
Mine dump	
Former disposal site or mine	

PROJECTION AND GRIDS

Neatline	39°15' 90°37'30"
Gaticule tick	— — 55'
Gaticule intersection	+
Datum shift tick	— —

State plane coordinate systems

Primary zone tick	— — 640 000 FEET
Secondary zone tick	— — 247 500 METERS
Tertiary zone tick	— — 260 000 FEET
Quaternary zone tick	— — 98 500 METERS
Quintary zone tick	— — 320 000 FEET

Universal transverse metcator grid

UTM grid (full grid)	— — 273
UTM grid ticks*	— — 269

RAILROADS AND RELATED FEATURES

Standard gauge railroad, single track	— — — —
Standard gauge railroad, multiple track	— — — — — —
Narrow gauge railroad, single track	— — — —
Narrow gauge railroad, multiple track	— — — — — —
Railroad siding	
Railroad in highway	
Railroad in road	
Railroad in light duty road*	
Railroad underpass; overpass	
Railroad bridge; drawbridge	
Railroad tunnel	
Railroad yard	
Railroad turntable; roundhouse	

RIVERS, LAKES, AND CANALS

Perennial stream	
Perennial river	
Intermittent stream	
Intermittent river	
Disappearing stream	
Falls, small	
Falls, large	
Rapids, small	
Rapids, large	
Masonry dam	
Dam with lock	
Dam carrying road	

RIVERS, LAKES, AND CANALS – *continued*

Perennial lake/pond	
Intermittent lake/pond	
Dry lake/pond	
Narrow wash	
Wide wash	
Canal, flume, or aqueduct with lock	
Elevated aqueduct, flume, or conduit	
Aqueduct tunnel	
Water well, geyser, fumarole, or mud pot	
Spring or seep	

ROADS AND RELATED FEATURES

Please note: Roads on Provisional-edition maps are not classified as primary, secondary, or light duty. These roads are all classified as improved roads and are symbolized the same as light duty roads.

Primary highway	
Secondary highway	
Light duty road	
Light duty road, paved*	
Light duty road, gravel*	
Light duty road, dirt*	
Light duty road, unspecified*	
Unimproved road	
Unimproved road*	
4WD road	
4WD road*	
Trail	
Highway or road with median strip	
Highway or road under construction	
Highway or road underpass; overpass	
Highway or road bridge; drawbridge	
Highway or road tunnel	
Road block, berm, or barrier*	
Gate on road*	
Trailhead*	

SUBMERGED AREAS AND BOGS

Marsh or swamp	
Submerged marsh or swamp	
Wooded marsh or swamp	
Submerged wooded marsh or swamp	
Land subject to inundation	

Max Pool 43!

SURFACE FEATURES

Levee	
Sand or mud	
Disturbed surface	
Gravel beach or glacial moraine	
Tailings pond	

TRANSMISSION LINES AND PIPELINES

Power transmission line; pole; tower	
Telephone line	
Aboveground pipeline	
Underground pipeline	

VEGETATION

Woodland	
Shrubland	
Orchard	
Vineyard	
Mangrove	

* USGS-USDA Forest Service Single-Edition Quadrangle maps only.

In August 1993, the U.S. Geological Survey and the U.S. Department of Agriculture's Forest Service signed an Interagency Agreement to begin a single-edition joint mapping program. This agreement established the coordination for producing and maintaining single-edition primary series topographic maps for quadrangles containing National Forest System lands. The joint mapping program eliminates duplication of effort by the agencies and results in a more frequent revision cycle for quadrangles containing National Forests. Maps are revised on the basis of jointly developed standards and contain normal features mapped by the USGS, as well as additional features required for efficient management of National Forest System lands. Single-edition maps look slightly different but meet the content, accuracy, and quality criteria of other USGS products.

** Provisional-Edition maps only.

Provisional-edition maps were established to expedite completion of the remaining large-scale topographic quadrangles of the conterminous United States. They contain essentially the same level of information as the standard series maps. This series can be easily recognized by the title "Provisional Edition" in the lower right-hand corner.

*** Topographic Bathymetric maps only.

Topographic Map Information

For more information about topographic maps produced by the USGS, please call: 1-888-ASK-USGS or visit us at <http://ask.usgs.gov/>

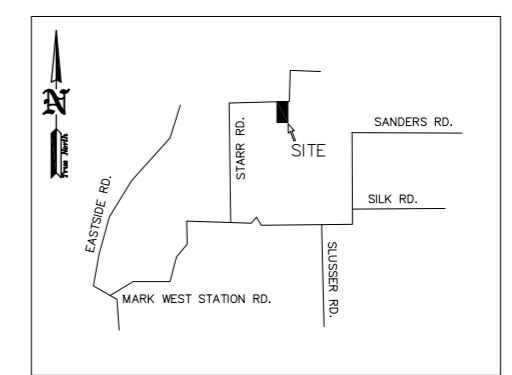
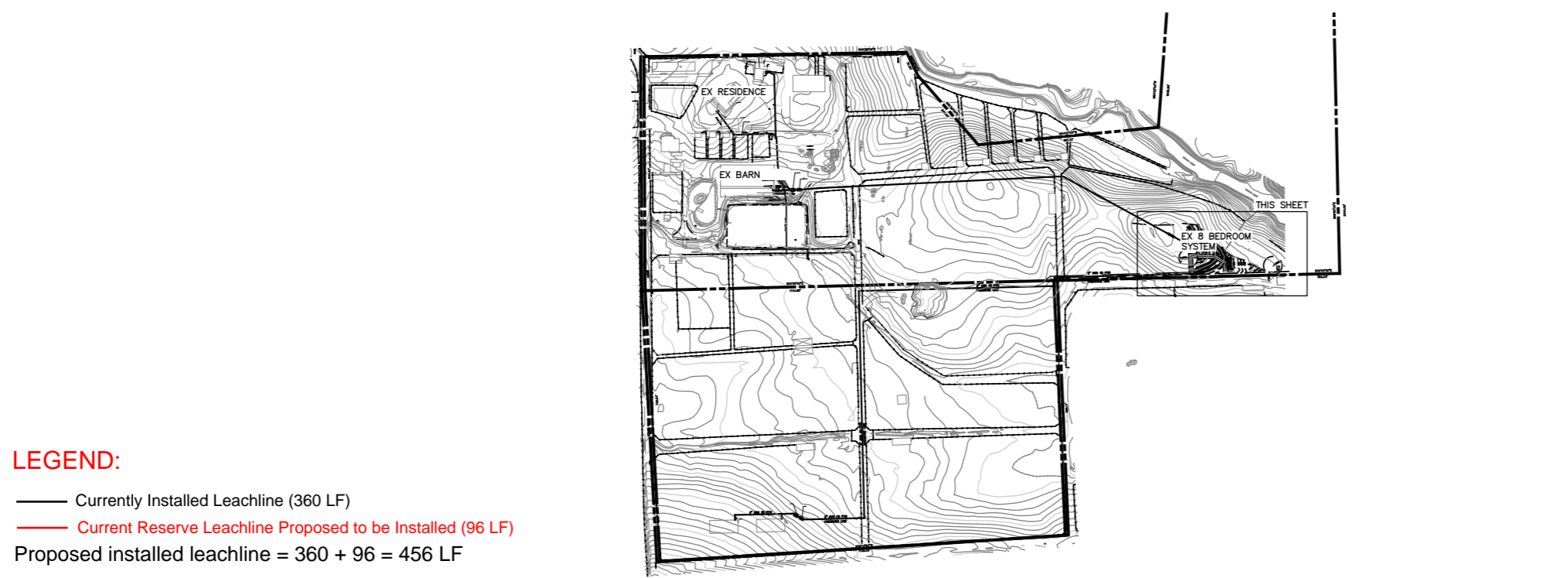
Bricoleur Vineyards
Wastewater Feasibility Study
August 31, 2022

SUMMIT ENGINEERING, INC.
Project No. 2020164

ENCLOSURE E
Proposed Modifications to Dispersal Area

FOR REDUCED PLANS, THE ORIGINAL SCALE IS IN INCHES

Path: V:\Proj\17-003\Draw\17-003.dwg Layout Name: --- Plot Date: January 31, 2017 at 12:30:36 PM by EJM

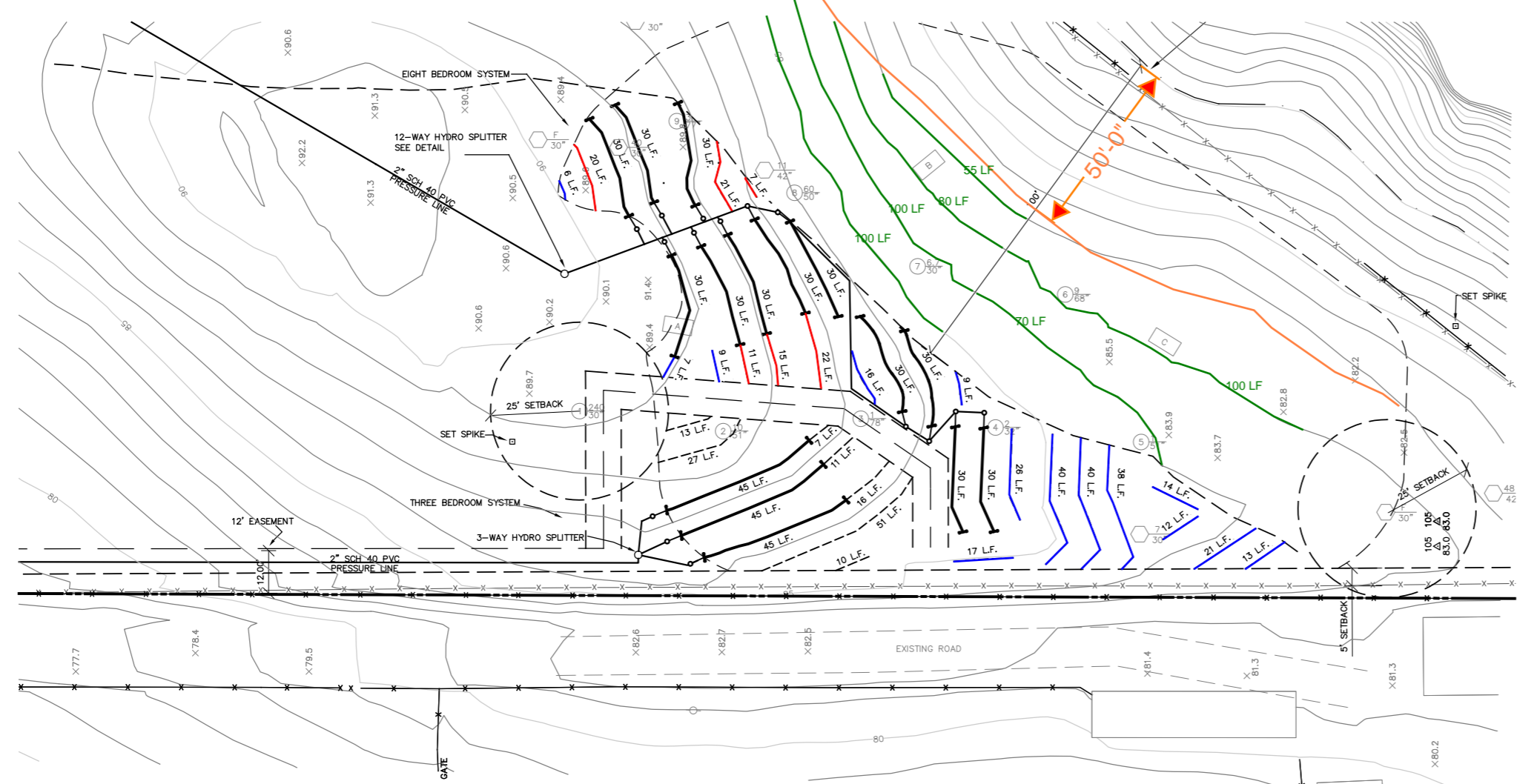


Vicinity Map
N.T.S.

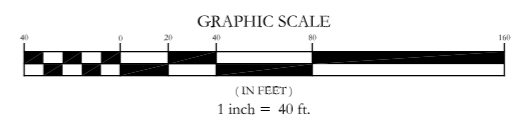
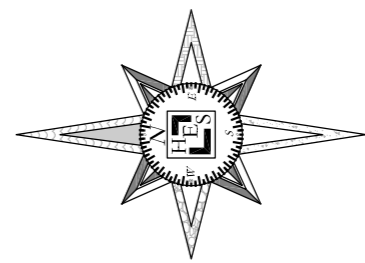
LEGEND:

- Currently Installed Leachline (360 LF)
- Current Reserve Leachline Proposed to be Installed (96 LF)
- Proposed installed leachline = 360 + 96 = 456 LF
- Current Reserve Leachline Proposed to Remain as Reserve (268 LF)
- New Reserve Leachline (505 LF)
- Proposed reserve leachline = 268 + 505 = 773 LF

Site Map
Scale 1"=400'

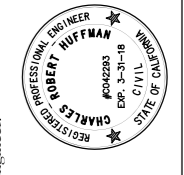


Sewage Disposal System Area
Scale 1"=40'



Huffman Engineering & Surveying
537 College Avenue, Suite A
Santa Rosa, Ca. 95404
P: (707) 542-6559
www.huffmanengineering.net

#	Date	Description

Engineer:  Rob Huffman P.E. 42293

LANDS OF STARR HOLDINGS, LLC
8 BEDROOM SEWAGE DISPOSAL SYSTEM
7390 STARR ROAD
WINDSOR, CALIFORNIA
A.P.N.: 066-220-019

Date: 01/30/17	Scale: 1" = 40'
File: 17-003	Sheet
Drawn: EJM	1
Job: 17-003	Of 1 Sheets

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