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Wastewater Feasibility Study  
Staglin Family Vineyards Major  
Modification  
P18-00253-MOD

RECEIVED

MAR 11 2019

Napa County Planning, Building  
& Environmental Services

WASTEWATER FEASIBILITY  
STUDY

STAGLIN FAMILY VINEYARD

1570 Bella Oaks Lane  
Rutherford, CA 94574  
APNs: 027-250-063, 027-250-064 & 027-  
250-065



CIVIL STRUCTURAL ELECTRICAL WATER|WASTEWATER

Project No. 2018041  
June 12, 2018  
Revised October 16, 2018

## TABLE OF CONTENTS

PROJECT OVERVIEW .....	1
WINERY PROCESS WASTEWATER MANAGEMENT SYSTEM .....	1
PROCESS WASTEWATER CHARACTERISTICS .....	1
PROCESS WASTEWATER DESIGN FLOWS .....	3
SOIL INVESTIGATION RESULTS .....	4
PROCESS WASTEWATER CONVEYANCE, TREATMENT, AND DISPOSAL .....	4
SOLID WASTES.....	5
SANITARY SEWAGE CHARACTERISTICS .....	6
WINERY SANITARY SEWAGE DESIGN FLOWS.....	7
WINERY SANITARY SEWAGE CONVEYANCE, TREATMENT AND DISPOSAL .....	7
OTHER CONSIDERATIONS.....	8
ODOR CONTROL .....	8
GROUNDWATER CONTAMINATION .....	8
PROTECTION.....	8
ALTERNATIVE COURSES OF ACTION.....	<b>ERROR! BOOKMARK NOT DEFINED.</b>

## LIST OF ENCLOSURES

Enclosure A:	Vicinity Map Overall Site Plan 2002 WW Management System Expansion Plans
Enclosure B:	Sanitary Sewage Flow Estimates
Enclosure C:	Site Evaluation Data

## **PROJECT OVERVIEW**

Staglin Family Vineyard is applying for a Use Permit Modification to allow for increased employees and marketing events at its existing winery facility located at 1570 Bella Oaks Lane, in Rutherford (APN: 027-250-063, 027-250-064 & 027-250-065). The project site is located approximately 0.7 miles southwest of Highway 29/128. The majority of the project site extends over a gently sloping terrain along the valley floor, sloping northeast at approximately 5% or less towards the Napa River.

Staglin Family Vineyard is made up of three parcels, a 10 acre parcel containing the winery and hospitality buildings, a 50 acre vineyard parcel, and a 3.4 acre parcel containing a single family residence. The single family residence utilizes a separate septic system and is not considered as part of this feasibility study. The Use Permit Application includes modifications to the winery's marketing program. Changes include modifications to the approved tours and tastings program to allow activities for up to 44 visitors per day and increasing the number of employees to 11 full-time and 5 part-time. The number of marketing events per year will also be increased, but all events will utilize portable toilet facilities and will not contribute to sanitary sewage generation. No increase to the process wastewater (PW) production is proposed, as no increase in wine production is proposed. The existing combined SS and PW pressure distribution (PD) leachfield (installed in 2001, expanded in 2002) will continue to be used for disposal of wastewater from winery processes and domestic uses. The PD leachfield is located on parcel 027-250-065 under an existing solar array permitted under B07-00337. Summit Engineering has prepared the following Wastewater Feasibility Study outlining the PW and SS flows from the existing winery and the associated treatment and disposal system.

## **WINERY PROCESS WASTEWATER MANAGEMENT SYSTEM**

The existing PD leachfield is sized to include PW generation from an annual production of 36,000 gallons of wine. The PW portion of the system includes a gravity collection system, 2-3,000 gallon septic tanks, 1-1,500 gallon septic tank, a combined 1,500 gallon PW and SS pump station, and a combined PD leachfield. No changes to the wine production are proposed, and as such, no changes to the PW flows are expected.

The PW management system was designed and installed in accordance with all necessary Napa County Planning, Building and Environmental Services (PBES) and Regional Water Quality Control Board (RWQCB) criteria and requirements.

## **PROCESS WASTEWATER CHARACTERISTICS**

Process wastewater will consist primarily of wastewater collected at floor drains within the winery, receiving, crush, tank, and wash down areas. No distillation occurs at the facility; hence there is no stillage waste. Typical winery wastewater characteristics are as summarized below:

**TABLE 1. TYPICAL WINERY PROCESS WASTEWATER CHARACTERISTICS**

<u>Characteristic</u>	<u>Units</u>	<u>Crushing Season Range</u>	<u>Non-crushing Season Range</u>
pH	--	2.5 - 9.5	3.5 - 11.0
Dissolved Oxygen	mg/L	0.5 - 8.5	1.0 - 10.0
BOD <sub>5</sub>	mg/L	500 – 12,000	300 – 3,500
COD	mg/L	800 – 15,000	500 – 6,000
Grease	mg/L	5 - 30	5 - 50
Settleable Solids	mg/L	25 - 100	2 - 100
Nonfilterable Residue	mg/L	40 - 800	10 - 400
Volatile Suspended Solids	mg/L	150 - 700	80 - 350
Total Dissolved Solids	mg/L	80 – 2,900	80 – 2,900
Nitrogen	mg/L	1 - 40	1 - 40
Nitrate	mg/L	0.5 - 4.8	-
Phosphorous	mg/L	1 - 10	1 - 40
Sodium	mg/L	35 - 200	35 - 200
Alkalinity (CaCO <sub>3</sub> )	mg/L	40 - 730	10 - 730
Chloride	mg/L	3 - 250	3 - 250
Sulfate	mg/L	10 - 75	20 - 75

### **PROCESS WASTEWATER DESIGN FLOWS**

Based on typical flow data from wineries of similar size and characteristics and corresponding process wastewater (PW) generation rates, projected flows are calculated as follows:

#### **Annual Volume**

Annual Production	=	36,000	gal wine/year
Generation Rate (assumed) <sup>a</sup>	=	165	gal wine/ton grapes
Tons Crushed	=	218	tons grapes/year
Process Wastewater (PW) Generation Rate <sup>b</sup>	=	6.00	gal PW/gal wine
Annual PW Flow	=	<u>216,000</u>	<u>gal PW/year</u>
<b><u>Average Day Flow</u></b>	=	<u>592</u>	<u>gal PW/day</u>

#### **Napa County Peak Day Flow**

Peak Harvest Day Flow (45 day harvest)	=	<u>1,200</u>	<u>gal PW/day</u>
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#### **Average, Day Peak Harvest Month Flow**

The harvest month of September accounts for approximately 16.4 percent of the annual PW flow.

Peak Flow	=	<u>1,181</u>	<u>gal PW/day</u>
	=	<u>1,200</u>	<u>gal PW/day</u>

#### Notes:

- a. 165 Gal wine per ton of grapes is used as a wine industry standard
- b. 6.0 gal of PW per gallon wine produced over the course of 1 year is based on the average of data from approximately 16 wineries

The PW design flow accounts for the most conservative approach; therefore 1,200 gpd will be used for preliminary system sizing as outlined below.

### **SOIL INVESTIGATION RESULTS**

A site evaluation was performed by Nat Passaglia of Napa County Environmental Management on November 11, 2000 in the area of the existing leachfield. In the primary area, acceptable soil was found to be 36" to 42" with an assigned percolation rate of 20 MPI and a soil application rate of 0.657 gallons per square foot per day. See Enclosure C for the soil evaluation results.

### **PROCESS WASTEWATER CONVEYANCE, TREATMENT, AND DISPOSAL**

The owner intends to continue to use the existing PD leachfield for all PW and SS generated by winery operations. The footprint of the combined PW and SS system will remain the same at 14,400 SF or 1,800 LF.

The existing and proposed process wastewater system consists of the components listed below. Refer to Enclosure A for the PW management system schematic and Overall Site Plan.

#### ***EXISTING AND PROPOSED PW TREATMENT SYSTEM***

##### **SOLIDS REMOVAL**

PW flows by gravity to 2-3,000 gallon settling tanks and 1-1,500 gallon settling tank. Solids settling and digestion in the settling tanks helps to reduce BOD and TSS concentrations entering the disposal system, resulting in higher treatment, and reduced potential for clogging of the disposal field. The existing 7,500 gallons of settling tank volume exceeds the Napa County PBES criteria, which requires 3 days min of settling capacity.

$$\begin{aligned}\text{Volume} &= 3 \text{ HRT} \times \text{Flow rate} \\ \text{Volume} &= 3 (1,200 \text{ gpd}) \\ \text{Volume} &= \underline{3,600 \text{ gallons}}\end{aligned}$$

##### **COMBINED PUMP TANK**

A 1,500 gallon pump station receives PW and SS collected from the winery and hospitality buildings, and sends it to disposal in the existing PD leachfield.

##### **PD DISPOSAL SYSTEM – SS & PW**

The existing PD system will be utilized for disposal of PW and SS. The PD system is sized for disposal of PW in combination with SS flows. The system is designed with 1,800 LF of leachline, spaced 8 feet on center and with 12" to 15" of fill.

$$\text{PD Leach Field Size} = \frac{1,572 \text{ gpd}^a}{1.33 \frac{\text{SF}}{\text{LF}} \times \frac{0.657 \text{ gal}}{\text{SF} \times \text{day}}} = 1,800 \text{ LF minimum}$$

<sup>a</sup> The total flow accounts for 1,200 gpd of PW and 372 gpd of SS.

Three 600 LF subfields provide a total of 1,800 lineal feet of PD leachline. With trench spacing at 8 feet on-center, a total area of 14,400 SF is utilized for combined SS and PW flow disposal. A 100% expansion area is located southeast of the existing PD leachfield adjacent to Bella Oaks Lane. See Enclosed Use Permit site plan and 2002 WW Management System Expansion plans for details.

## SOLID WASTES

Solid wastes from the winery primarily include pomace, seeds, and stems. The estimated quantities of these wastes (at peak capacity) are as follows:

$$\text{Peak annual production} = 36,000 \text{ gal wine} \times \frac{1 \text{ ton}}{165 \text{ gal}} = 218 \text{ tons}$$

$$\text{Ultimate Annual Total} = 35\% \times 218 \text{ tons} = 76 \text{ tons}$$

Based on a unit weight of 38 pounds per cubic foot, the annual volume of solids wastes is:

$$76 \text{ tons} \times \frac{2,000 \text{ lb}}{1 \text{ ton}} = 152,000 \text{ lb}$$

$$152,000 \text{ lbs} \times \frac{1 \text{ ft}^3}{38 \text{ lb}} \times \frac{1 \text{ yd}^3}{27 \text{ ft}^3} = 148 \text{ yd}^3$$

These organic solids are hauled to an off-site composting location, or composted and land applied to the existing vineyards.

## SANITARY SEWAGE MANAGEMENT SYSTEM

Staglin Family Vineyard intends to utilize the existing combined PW and SS wastewater management system in accordance with all necessary Napa County Planning, Building, and Environmental Services (PBES) criteria and permits. SS flows will continue to be disposed of in the PD leachfield.

The SS management system includes SS collection, 1,500 gallon septic tank, a combined 1,500 gallon PW and SS pump station, and discharge to a PD leachfield. The existing wastewater management system has been sized for a peak daily SS flow of approximately 150 gal/day. The proposed marketing changes increase the peak daily SS flow to approximately 372 gal/day.

### **SANITARY SEWAGE CHARACTERISTICS**

SS will consist primarily of wastewater generated from restrooms, offices, and tasting room facilities. Typical SS characteristics are summarized below:

**TABLE 2. TYPICAL SANITARY SEWER CHARACTERISTICS**

<b><u>Characteristic</u></b>	<b><u>Units</u></b>	<b>Raw Wastewater<sup>1</sup> <u>Range</u></b>
BOD <sub>5</sub>	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 <sub>3</sub> )	mg/L	50 - 100
Chloride	mg/L	30 - 50
Sulfate	mg/L	20 - 30

<sup>1</sup>Typical composition of untreated domestic wastewater, Metcalf & Eddy, "Wastewater Engineering, Third Edition", 1991

### **WINERY SANITARY SEWAGE DESIGN FLOWS**

The proposed SS management system at Staglin Family Vineyard will consist of typical wastewater generated from the offices and tasting room restrooms. In addition to regular tasting visitors, Staglin Family Vineyard will have 32 marketing events per year with up to 12 visitors, 16 marketing events per year with up to 32 visitors, 4 marketing events per year with up to 100 visitors, and 1 marketing event per year with up to 250 visitors. Portable toilets will be provided for all visitors associated with marketing events, therefore peak SS generation is estimated using only employees and daily tasting visitors. For tasting visitors, the peak flow is estimated using 3 gallons per capita per day (gpcd) cap for wine tasting with hors d'oeuvres. The estimated peak day harvest flows are provided below.

#### **Peak Day – Harvest and Maximum Marketing Event**

Employee (full-time)	11	x	15	gpcd	=	165	gal/day
Employees (part-time)	5	x	15	gpcd	=	75	gal/day
Tasting Visitors (30 person event)	44	x	3	gpcd	=	132	gal/day
<b>Total</b>					=	<b>372</b>	<b>gal/day</b>

The SS management system is designed to handle a peak daily SS flow of 372 gpd, in addition to the 1,200 gpd expected from the PW system.

### **WINERY SANITARY SEWAGE CONVEYANCE, TREATMENT AND DISPOSAL**

The winery SS treatment and disposal system has the components described below. Refer to the enclosed Use Permit site plan and 2002 WW Management System Expansion plans for details.

#### **SEPTIC TANK**

Solids settling and digestion in the septic tanks helps to reduce BOD and TSS concentrations entering the disposal system, reducing the potential for clogging of the disposal field. An effluent filter is provided to remove additional suspended solids which do not settle out in the septic tank. The required septic tank size for the SS flows was evaluated based on the Uniform Plumbing Code, as follows:

#### **Uniform Plumbing Code Method:**

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

$$Volume = 1,125 + 0.75 \times 372\ gpd$$

$$Volume = 1,404\ gallons$$

The existing 1,500 gallon precast concrete septic tank is adequately sized for estimated SS flows.

### **PD DISPOSAL SYSTEM - SS & PW**

The PD system sized for disposal of the SS in combination with PW flows requires a total area of 14,400 square feet (See PD disposal system description above). A total of 1,800 LF of combined PW & SS pressure distribution leachfield is provided for disposal of all SS & PW flows.

## **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 water well to the PW and SS treatment and disposal system is a minimum of 100 feet. No disposal of wastewater effluent will occur within 100 feet of any existing wells. Neither PW nor SS is used, or will be used in the future for irrigation.

### **PROTECTION**

Exposed wastewater treatment facilities are posted with appropriate warning signs. The PD leachfield treatment area is protected by a photovoltaic solar array that is installed directly over the disposal field. The solar field both restricts access and minimizes potential damage to the system.

Staglin Family Vineyard  
Wastewater Feasibility Study  
June 12, 2018  
Revised October 16, 2018

**SUMMIT ENGINEERING, INC.**  
Project No. 2018041

**ENCLOSURE A**

**VICINITY MAP**

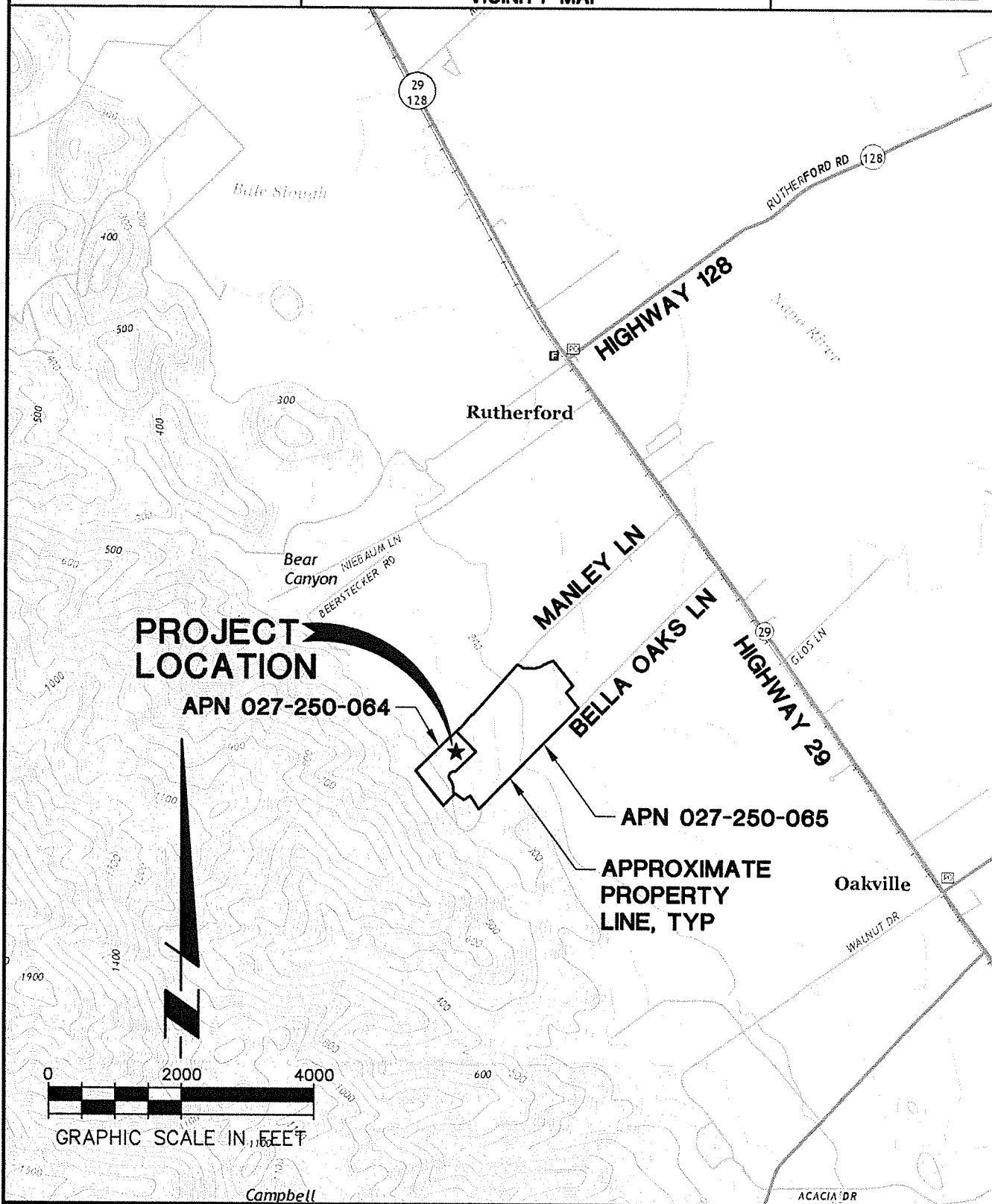
**OVERALL SITE PLAN**

SUMMIT

STAGLIN FAMILY VINEYARD  
1475 MANLEY LANE  
RUTHERFORD, CA  
APN 027-250-064, & 065

PROJECT NO. 2018041  
DATE 2018-05-23  
SHT NO 1 OF 1  
BY TF CHK RP

VICINITY MAP



PLOTTED ON: 5/29/2018 10:31 AM  
P:\2018\2018041 STAGLIN FAMILY VINEYARD USE PERMIT\CAD\CIVIL\18041-VICINITY MAP.DWG



Staglin Family Vineyard  
Wastewater Feasibility Study  
June 12, 2018  
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**ENCLOSURE B**

**SANITARY SEWAGE FLOW ESTIMATES**

SUMMIT ENGINEERING, INC.	STAGLIN FAMILY VINEYARD Wastewater Feasibility Study Proposed Sanitary Sewage Flows	PROJECT NO. 2018041 BY: NM CHK: JR
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**SANITARY SEWAGE - PROPOSED**

**Average Day w/o Event - Non-harvest**

Employee (full-time)	11	x	15	gpcd	=	165	gal/day
Employee (part-time)	0	x	15	gpcd	=	0	gal/day
Tasting Visitors	44	x	3	gpcd	=	132	gal/day
<b>Total</b>					=	297	gal/day
					=	<b><u>297</u></b>	<b><u>gal/day</u></b>

**Peak Tasting Day Harvest w/Event**

Employee (full-time)	11	x	15	gpcd	=	165	gal/day
Employee (part-time)	5	x	15	gpcd	=	75	gal/day
Tasting Visitors	44	x	3	gpcd	=	132	gal/day
<b>Total</b>					=	372	gal/day
<b>DESIGN FLOW</b>					=	<b>372</b>	<b>gal/day</b>

Notes:

1) All marketing events are to be catered, and portable toilets will be required for all events. Multiple private/large events will not occur on the same day

Staglin Family Vineyard  
Wastewater Feasibility Study  
June 12, 2018  
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**SUMMIT ENGINEERING, INC.**  
Project No. 2018041

**ENCLOSURE C**

**SITE EVALUATION DATA**

**NAPA COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
REQUEST FOR SITE EVALUATION INSPECTION**

RECEIVED 76  
2000 NOV 20 2000  
"WASTEWATER"

ENVIRONMENTAL HEALTH DEPT. USE ONLY

FEE: \$ 303.00

PARCEL NUMBER:

27-150-003 (38)

DATE: 11-15-00

JOB ADDRESS:

157 BELLA PARK LN

RECEIPT: 155100

OWNER:

STAGLIN

BY: Job # 92-13103

TEST CONDUCTED BY:

HAROLD SMITH &amp; SONS

LAST DRIVEWAY ON RT

TYPE OF TEST: FIELD ANALYSIS: ☒

PERCOLATION TEST

To be run on 11/9/00 at 10:00 am/pm

To be run on \_\_\_\_\_ from \_\_\_\_\_ am/pm to \_\_\_\_\_ pm

PURPOSE OF TEST: HOUSE: \_\_\_\_\_

WINERY: ☒

OTHER: \_\_\_\_\_

PROJECTED WASTEWATER FLOWS: \_\_\_\_\_

gpd

\*\*\*\*\*  
**PERCOLATION TEST INSPECTION RESULTS**  
\*\*\*\*\*

Pre-soak checked? yes \_\_\_\_\_ no \_\_\_\_\_ Length of pre-soak: \_\_\_\_\_

Checked by: \_\_\_\_\_ Date: \_\_\_\_\_

Rate at time of inspection: \_\_\_\_\_ Stabilized perc rate: \_\_\_\_\_

Gravel and Pipe Used? yes \_\_\_\_\_ no \_\_\_\_\_ If so, take the perc rate \_\_\_\_\_ x .6 = \_\_\_\_\_ in/hr

\*\*\*\*\*  
**TYPE OF SYSTEM APPROVED:**  
\*\*\*\*\*

**STANDARD SYSTEM**

Acceptable soil to: 36-42" / Assigned perc range: 1-3 / 3-6 / 6-12

Depth of trenches: \_\_\_\_\_ / Rock under pipe: \_\_\_\_\_ / Cover over rock: \_\_\_\_\_

Lineal feet of leachline required: \_\_\_\_\_ / Plot plan received: ~~NO~~ OK

Slope: FLAT ± / Surface drainage problems: \_\_\_\_\_

Additional information: \_\_\_\_\_

**SPECIAL DESIGN SYSTEM DUE TO THE FOLLOWING - Size constraints:**

Perc rate too slow: \_\_\_\_\_ / Perc rate too fast: \_\_\_\_\_ / Steep slope: \_\_\_\_\_

Insufficient soil depth: ☒ / High seasonal groundwater: \_\_\_\_\_

Acceptable soil for special design: 36-42" / Other problems: \_\_\_\_\_

SUITABLE AREA FOR P.D. LOCATED ON PARCEL # 27-150-38 IN AREA OF TEST  
HOLE # 3, 4, 5 IN VINEYARD EAST OF DWELLING AND EXTENDING 100' EAST (APPROX. 100' x 200')

## FIELD ANALYSIS

## TEXTURE ( In the proposed trench zone )

CLAY CONTENT							SAND CONTENT							GRAVEL, COBBLE, STONE CONTENT						
Core Hole	1	2	3	4	5	6	Core Hole	1	2	3	4	5	6	Core Hole	1	2	3	4	5	6
Low (<12)							High (>50)							Very High (>60)						
Mod (12-27)			X	X	X		Mod (20-50)	X	X	X	X	X	X	High (35-60)						
High (27-40)	X	X				X	Low (<20)							Mod (15-35)						
High (>40)														Low (<15)	X	X	X	X	X	X

## STRUCTURE

SOIL DENSITY WHEN PICKED (Circle whether wet or dry)

CONSISTENCE (Circle w or d)

Core Hole	1	2	3	4	5	6	Core Hole	1	2	3	4	5	6
pick sluffs or caves soil in							Easy						
pick bites and soil sluffs			X	X	X		Moderate	X	X	X	X	X	X
pick bites/ little or no soil sluffs	X	X				X	Hard						

## STRUCTURE

## MODIFIER CHARACTERISTICS

Core Hole	1	2	3	4	5	6
Granular						
Blocky	X	X	X	X	X	X
Prism						
Platy						
Massive						
Cemented						

1) Soil Survey Name: \_\_\_\_\_

2) Horizon Boundaries: Diffuse \_\_\_\_\_ Gradual \_\_\_\_\_ Abrupt X3) Topography: Concave FLAT Convex \_\_\_\_\_ / Aspect: \_\_\_\_\_4) Vegetation: Type GRASS Condition: Good

7-250-03 HOLE #1 EST. PERC

0 to 26 DARK CLAY 1-3

26 to 38 TIGHTENED CLAY 2 1/4"

38 to 60 TIGHTENED CLAY 2 1/4"

60 to 72 TIGHTENED CLAY 2 1/4"

72 to 84 TIGHTENED CLAY 2 1/4"

84 to 96 TIGHTENED CLAY 2 1/4"

96 to 108 TIGHTENED CLAY 2 1/4"

108 to 120 TIGHTENED CLAY 2 1/4"

120 to 132 TIGHTENED CLAY 2 1/4"

132 to 144 TIGHTENED CLAY 2 1/4"

144 to 156 TIGHTENED CLAY 2 1/4"

156 to 168 TIGHTENED CLAY 2 1/4"

168 to 180 TIGHTENED CLAY 2 1/4"

180 to 192 TIGHTENED CLAY 2 1/4"

192 to 204 TIGHTENED CLAY 2 1/4"

204 to 216 TIGHTENED CLAY 2 1/4"

216 to 228 TIGHTENED CLAY 2 1/4"

228 to 240 TIGHTENED CLAY 2 1/4"

27-250-38 HOLE #2 EST. PERC

0 to 36 SANDY CLAY 3-6

36 to 48 SANDY CLAY 3-6

48 to 60 SANDY CLAY 3-6

60 to 72 SANDY CLAY 3-6

72 to 84 SANDY CLAY 3-6

84 to 96 SANDY CLAY 3-6

96 to 108 SANDY CLAY 3-6

108 to 120 SANDY CLAY 3-6

120 to 132 SANDY CLAY 3-6

132 to 144 SANDY CLAY 3-6

144 to 156 SANDY CLAY 3-6

156 to 168 SANDY CLAY 3-6

168 to 180 SANDY CLAY 3-6

180 to 192 SANDY CLAY 3-6

192 to 204 SANDY CLAY 3-6

204 to 216 SANDY CLAY 3-6

216 to 228 SANDY CLAY 3-6

228 to 240 SANDY CLAY 3-6

27-250-38 HOLE #3 EST. PERC

0 to 36 SANDY CLAY 3-6

36 to 48 SANDY CLAY 3-6

48 to 60 SANDY CLAY 3-6

60 to 72 SANDY CLAY 3-6

72 to 84 SANDY CLAY 3-6

84 to 96 SANDY CLAY 3-6

96 to 108 SANDY CLAY 3-6

108 to 120 SANDY CLAY 3-6

120 to 132 SANDY CLAY 3-6

132 to 144 SANDY CLAY 3-6

144 to 156 SANDY CLAY 3-6

156 to 168 SANDY CLAY 3-6

168 to 180 SANDY CLAY 3-6

180 to 192 SANDY CLAY 3-6

192 to 204 SANDY CLAY 3-6

204 to 216 SANDY CLAY 3-6

216 to 228 SANDY CLAY 3-6

228 to 240 SANDY CLAY 3-6

HOLE #4 EST. PERC

0 to 30 SANDY CLAY 3-6

30 to 42 SANDY CLAY 3-6

42 to 54 SANDY CLAY 3-6

54 to 66 SANDY CLAY 3-6

66 to 78 SANDY CLAY 3-6

78 to 90 SANDY CLAY 3-6

90 to 102 SANDY CLAY 3-6

102 to 114 SANDY CLAY 3-6

114 to 126 SANDY CLAY 3-6

126 to 138 SANDY CLAY 3-6

27-250-38 HOLE #5 EST. PERC

0 to 24

24 to 42

42 to 60

60 to 78

78 to 96

96 to 114

114 to 132

132 to 150

150 to 168

168 to 186

27-250-38 HOLE #6 EST. PERC

0 to 20 DARK 1-3

20 to 40 CLAY LOOSE

40 to 60 TIGHTENED CLAY 2 1/4"

60 to 80 TIGHTENED CLAY 2 1/4"

80 to 100 TIGHTENED CLAY 2 1/4"

100 to 120 TIGHTENED CLAY 2 1/4"

120 to 140 TIGHTENED CLAY 2 1/4"

140 to 160 TIGHTENED CLAY 2 1/4"

160 to 180 TIGHTENED CLAY 2 1/4"

180 to 200 TIGHTENED CLAY 2 1/4"

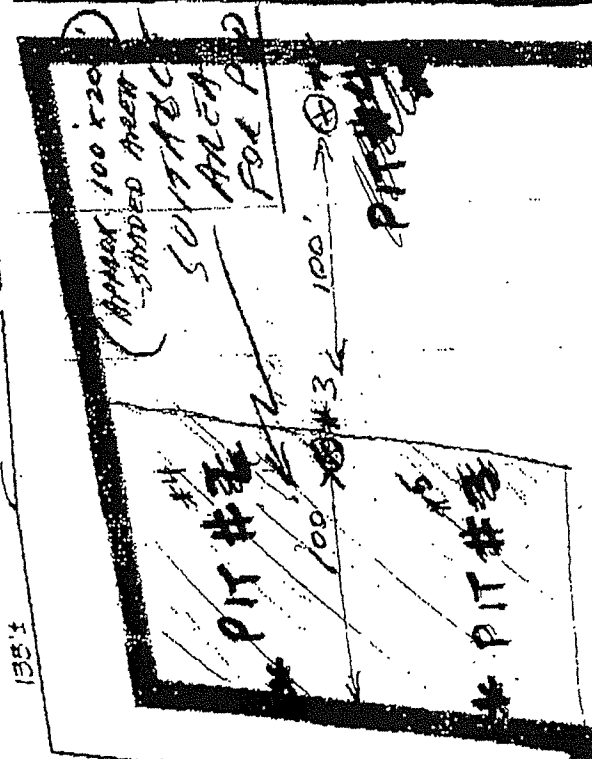
ADDITIONAL HOLE WILL BE EXCAVATED BETWEEN HOLE #4 &amp; #5 (WEST SIDE OF PARCEL) AND HOLE #6 (EAST SIDE) TO IDENTIFY TRANSITION ZONE (HOLE #2 &amp; #3)

TS/NJP/JFT/SP-1 - 11-26-89

MANLEY LANE

1030'±

135'±



EXISTING VINEYARD  
(TYPICAL)

5.0% ±

TAGLIN FAMILY VINEYARD

APN 27-250-38

46.87 ACRES (E)

40.07 ACRES (PROPOSED)

EXISTING ENTRANCE DRIVE  
(AC PAVEMENT)

#2  
⊗

27-250

Contact:  
Jason Roberts, P.E.  
Project Manager  
jason@summit-sr.com  
(707) 495-5254

**SUMMIT** 

**SUMMIT ENGINEERING, INC.**

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