



VINEYARD DESIGN  
EROSION CONTROL  
WATER DEVELOPMENT  
DRAINAGE  
PERMITTING  
GPS/GIS

## Exhibit D

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### MEMORANDUM

Date: April 3, 2019

To: Patrick Ryan, Napa County Planning, Building and Environmental Services

From: James R. Bushey, P.E.  
Austin Lemire-Baeten, E.I.T.

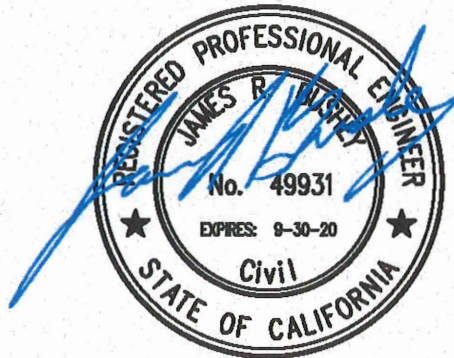
Cc: Don Barrella, Napa County Planning, Building and Environmental Services

Re: Darioush Curry Lane Track I ECP - APN 045-380-010  
Revised Soil Loss Analysis

This memo transmits the findings of a revised soil loss modeling analysis for the above-referenced Track I Erosion Control Plan (ECP). Pre-project cover values were updated as a result of the February 6<sup>th</sup>, 2019 site visit and per discussion with County staff.

Post-project cover values were increased in order to ensure no net increase in soil loss and the ECP will be revised and resubmitted to reflect these changes. This analysis is limited to the proposed vineyard areas as well as vineyard avenues (8.9 gross acres).

The model, summarized on page 1 of the supporting documents (attached), predicts a net decrease of approximately 2.4 tons of soil loss per year for the project as a whole. Please see the following supporting documents that contain data tables, calculations, maps of transect locations, and results from the analysis.



Darioush Curry Lane  
USLE Calculations  
PPI Engineering  
4/3/2019  
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**USLE Calculations - Block Summary Sheet**

<b>Proposed Block</b>	<b>Proposed Development Acres</b>	<b>Pre-Project Soil Loss (tons/year)</b>	<b>Post-Project Soil Loss (tons/year)</b>	<b>Net Increase/Decrease (tons/year)</b>
A	4.63	7.19	5.06	2.13
B	2.17	1.09	0.95	0.15
C	2.08	0.86	0.74	0.11
<b>Totals</b>	8.88	9.14	6.75	2.39

Note: Individual estimates may not add to the totals due to rounding

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**USLE Calculations - Transect Summary Sheet**

<b>Proposed Block Transect</b>	<b>Proposed Development Acres</b>	<b>Pre-Project Soil Loss (tons/year)</b>	<b>Post-Project Soil Loss (tons/year)</b>	<b>Net Increase/Decrease (tons/year)</b>
1	4.63	7.19	5.06	2.13
2	2.17	1.09	0.95	0.15
3	2.08	0.86	0.74	0.11
<b>Totals</b>	8.88	9.14	6.75	2.39

Note: Individual estimates may not add to the totals due to rounding

**Darioush Curry Lane**  
**USLE Calculation Sheets**

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 USLE Calculations Pre-Project  
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## Block A, Transect A

Proposed Development Acres:	4.63	
Soil Unit No. (100-182):	178	
Soil Name:	Sobranite	
K, Soil Erodibility:	0.32	
T, Soil Loss Tolerance (tons/acre):	2	
R, Rainfall:	40	
Total Transect Length (ft):	473	
Number of Segments:	2	
Individual Segment Lengths (ft):	237	
Segment:	1	2
Gradient (%):	16	10
m:		
Individual LS:	5.61	2.95
Factor:	0.35	0.65
Product:	1.96	1.92
LS, Length and Steepness:	3.88	
Total Transect Average Gradient (%):	13	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) <sup>1</sup> :	1.00	
Segmented C-Value		
Segment:	1	2
Vegetative Canopy:	Trees 13' Tall	No Canopy
Canopy Cover:	75%	0%
Ground Cover:	75%	75%
Percent Grass:	100%	100%
Percent Weeds:	0%	0%
C, Cover (Table 5) <sup>1</sup> :	0.019	0.038
Segment Factor:	0.35	0.65
Segmented C:	0.031	
A, Soil Loss (tons/acre):	1.55	
Soil Loss in Proposed Development (tons):	7.19	

<sup>1</sup> Tables 5 & 6 - USLE Special Applications for Napa County

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### Block A, Transect A

Proposed Development Acres:	4.63	
Soil Unit No. (100-182):	178	
Soil Name:	Sobranite	
K, Soil Erodibility:	0.32	
T, Soil Loss Tolerance (tons/acre):	2	
R, Rainfall:	40	
Total Transect Length (ft):	473	
Number of Segments:	2	
Individual Segment Lengths (ft):	237	
Segment:	1	2
Gradient (%):	16	10
m:		
Individual LS:	5.61	2.95
Factor:	0.35	0.65
Product:	1.96	1.92
LS, Length and Steepness:	3.88	
Total Transect Average Gradient (%):	13	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) <sup>1</sup> :	1.00	
Cover Strategy:	Permanent	
Age of Development:	Over 3 Years	
Ground Cover:	80%	
C, Cover (Table 4) <sup>1</sup> :	0.022	
A, Soil Loss (tons/acre):	1.09	
Soil Loss in Proposed Development (tons):	5.06	

<sup>1</sup> Tables 4 & 6 - USLE Special Applications for Napa County

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## Block B, Transect B

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Proposed Development Acres:	2.17
Soil Unit No. (100-182):	152
Soil Name:	Hambright-Rock Outcrop
K, Soil Erodibility:	0.1
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	40
Total Transect Length (ft):	530
Number of Segments:	1
Individual Segment Lengths (ft):	530
Segment:	
Gradient (%):	14
m:	
Individual LS:	4.95
Factor:	
Product:	
LS, Length and Steepness:	4.95
Total Transect Average Gradient (%):	14
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Vegetative Canopy:	Brush 3' Tall
Canopy Cover:	50%
Ground Cover:	75%
Percent Grass:	75%
Percent Weeds:	25%
C, Cover (Table 5) <sup>1</sup> :	0.025
A, Soil Loss (tons/acre):	0.50
Soil Loss in Proposed Development (tons):	1.09

<sup>1</sup> Tables 5 & 6 - USLE Special Applications for Napa County

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USLE Calculations Post-Project  
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### **Block B, Transect B**

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Proposed Development Acres:	2.17
Soil Unit No. (100-182):	152
Soil Name:	Hambright-Rock Outcrop
K, Soil Erodibility:	0.1
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	40
Total Transect Length (ft):	530
Number of Segments:	1
Individual Segment Lengths (ft):	530
Segment:	
Gradient (%):	14
m:	
Individual LS:	4.95
Factor:	
Product:	
LS, Length and Steepness:	4.95
Total Transect Average Gradient (%):	14
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) <sup>1</sup> :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	80%
C, Cover (Table 4) <sup>1</sup> :	0.022
A, Soil Loss (tons/acre):	0.44
Soil Loss in Proposed Development (tons):	0.95

<sup>1</sup> Tables 4 & 6 - USLE Special Applications for Napa County



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### Block C, Transect C

Proposed Development Acres:	2.08	
Soil Unit No. (100-182):	152	
Soil Name:	Hambright-Rock Outcrop	
K, Soil Erodibility:	0.1	
T, Soil Loss Tolerance (tons/acre):	1	
R, Rainfall:	40	
Total Transect Length (ft):	678	
Number of Segments:	2	
Individual Segment Lengths (ft):	339	
Segment:	1	2
Gradient (%):	13	10
m:		
Individual LS:	5.06	3.53
Factor:	0.35	0.65
Product:	1.77	2.29
LS, Length and Steepness:	4.07	
Total Transect Average Gradient (%):	12	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) <sup>1</sup> :	1.00	
Vegetative Canopy:	Brush 3' Tall	
Canopy Cover:	50%	
Ground Cover:	75%	
Percent Grass:	75%	
Percent Weeds:	25%	
C, Cover (Table 5) <sup>1</sup> :	0.025	
A, Soil Loss (tons/acre):	0.41	
Soil Loss in Proposed Development (tons):	0.86	

<sup>1</sup> Tables 5 & 6 - USLE Special Applications for Napa County

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### Block C, Transect C

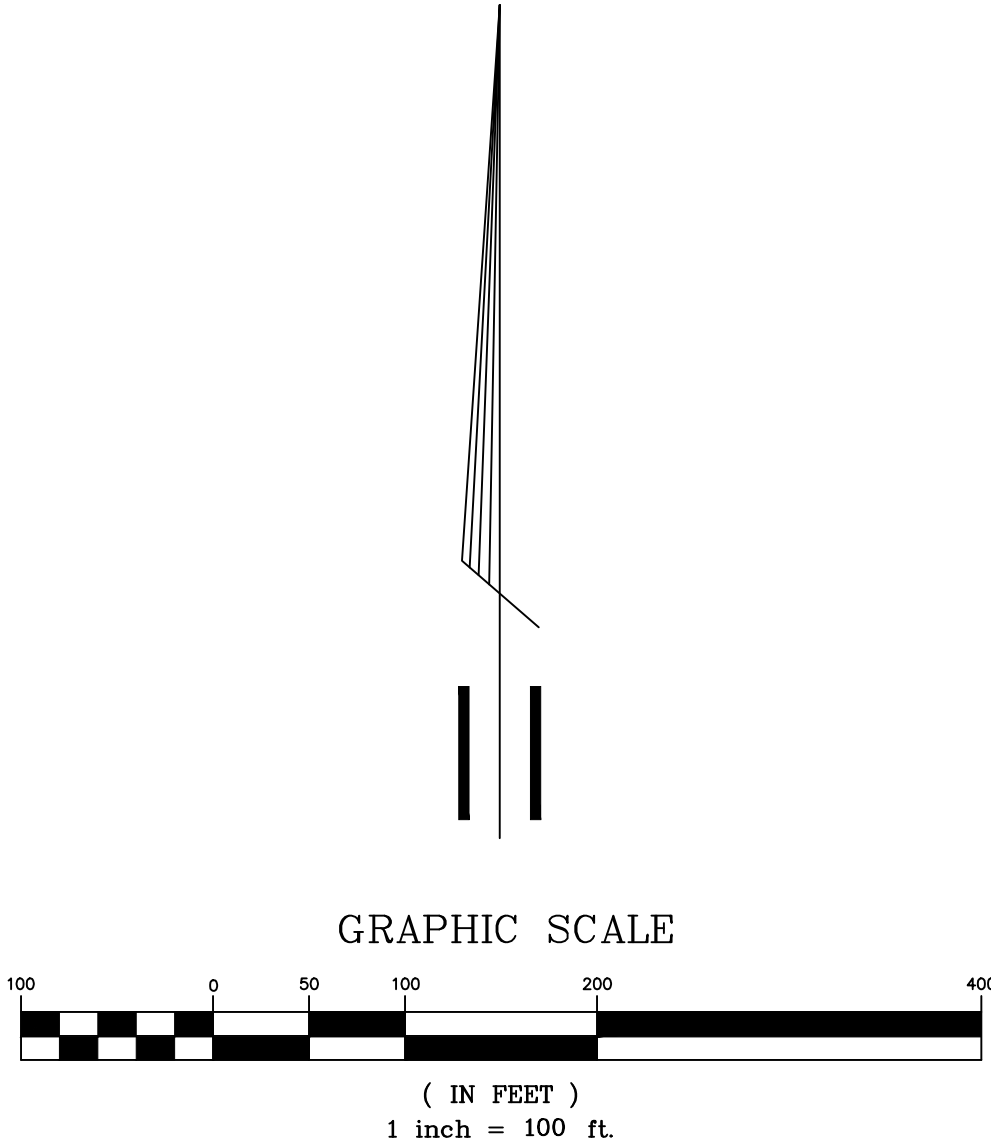
Proposed Development Acres:	2.08	
Soil Unit No. (100-182):	152	
Soil Name:	Hambright-Rock Outcrop	
K, Soil Erodibility:	0.1	
T, Soil Loss Tolerance (tons/acre):	1	
R, Rainfall:	40	
Total Transect Length (ft):	678	
Number of Segments:	2	
Individual Segment Lengths (ft):	339	
Segment:	1	2
Gradient (%):	13	10
m:		
Individual LS:	5.06	3.53
Factor:	0.35	0.65
Product:	1.77	2.29
LS, Length and Steepness:	4.07	
Total Transect Average Gradient (%):	12	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) <sup>1</sup> :	1.00	
Cover Strategy:	Permanent	
Age of Development:	Over 3 Years	
Ground Cover:	80%	
C, Cover (Table 4) <sup>1</sup> :	0.022	
A, Soil Loss (tons/acre):	0.36	
Soil Loss in Proposed Development (tons):	0.74	

<sup>1</sup> Tables 4 & 6 - USLE Special Applications for Napa County





TOPOGRAPHIC MAPPING SOURCE: AMERICAN AERIAL MAPPING, INC., 2' CONTOURS, JANUARY 2018  
2014 NAPA COUNTY ORTHOPHOTO



### LEGEND

- USGS BLUELINE STREAM
- EXISTING BUILDING
- EXISTING ROAD
- PROPOSED VINEYARD DEVELOPMENT AREA BY TRANSECT
- PROPOSED VINEYARD BLOCK BOUNDARY
- PROPOSED VINEROW DIRECTION
- USLE TRANSECT WITH SLOPE
- SOIL TYPE BOUNDARY

### USDA SOIL CLASSIFICATIONS:

- HAIRE LOAM, 2 TO 9% SLOPES
- HAMBRIGHT ROCK-OUTCROP COMPLEX, 30 TO 75% SLOPES
- SOBRANTE LOAM, 5 TO 30% SLOPES



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DARIOUSH ESTATE 2100 CURRY LANE			
EROSION CONTROL PLAN			
SOIL LOSS ANALYSIS			
DESIGN ENGINEER: J. BUSHEY, M. BUENO			
SCALE: AS SHOWN	DRAWN BY: ALB, RR	DATE: 12-18-18	SHEET: 1 OF: 1