

MEMORANDUM

Date: July 11, 2018

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

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

Cc: Brian Bordona, Napa County Planning, Building and Environmental Services

Re: Metamorphosis Wines LLC
Ovid Vineyards Track I ECP
APNs 032-030-065 & -066 Soil Loss Analysis

This memo transmits the findings of a soil loss modeling analysis for the above-referenced Track I Erosion Control Plan (ECP). The Universal Soil Loss Equation (USLE) was used to predict pre-project and post-project soil loss from within the proposed vineyard development areas. A combination of topographic maps, aerial imagery and a site visit were used to determine pre-project transect locations, slopes and cover values. Pre-project and post-project cover values are consistent with the United States Department of Agriculture (USDA) – Natural Resource Conservation Service (NRCS) publication titled “The Universal Soil Loss Equation Special Applications for Napa County, California” (May 1994).

A site visit was conducted on January 16, 2018 by Matt Bueno of PPI Engineering to determine the pre-project cover values for each block and/or transect area. All proposed development areas were inspected, and the cover values used in this analysis represent existing conditions at the time of the site visit. Post-project cover values were calculated using the percent cover specified in the ECP. This analysis is limited to the proposed vineyard areas as well as vineyard avenues (38.9 gross acres).

The model, summarized on page 1 of the supporting documents (attached), predicts a net decrease of approximately 28.5 tons of soil loss per year for the project as a whole. The ECP has been designed to ensure compliance with Napa County policies requiring no-net-increases in soil loss for post-project conditions. Please see the following supporting documents that contain data tables, calculations, maps of transect locations and results from the analysis.



SUPPORTING DOCUMENTS

Metamorphosis Wines, LLC Track I ECP
 USLE Calculations
 PPI Engineering
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USLE Calculations - Block Summary Sheet

Proposed Block	Proposed Development Acres	Pre-Project Soil Loss (tons/year)	Post-Project Soil Loss (tons/year)	Net Increase/Decrease (tons/year)
1	1.31	2.74	2.56	0.18
2A	4.41	11.75	10.96	0.79
2B	3.77	13.62	12.59	1.03
2C	13.58	41.54	32.97	8.57
3	1.84	9.39	5.44	3.96
4	2.11	3.86	2.14	1.72
5	11.92	53.19	40.92	12.27
Totals	38.94	136.10	107.58	28.52

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

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USLE Calculations - Transect Summary Sheet

Proposed Block Transect	Proposed Development Acres	Pre-Project Soil Loss (tons/year)	Post-Project Soil Loss (tons/year)	Net Increase/Decrease (tons/year)
1	1.31	2.74	2.56	0.18
2A	4.41	11.75	10.96	0.79
2B	3.77	13.62	12.59	1.03
2C-1	8.76	24.39	21.71	2.68
2C-2	3.35	15.16	9.41	5.76
2C-3	1.47	1.99	1.86	0.13
3	1.84	9.39	5.44	3.96
4	2.11	3.86	2.14	1.72
5A	9.54	49.73	38.82	10.90
5B	2.38	3.47	2.10	1.37
Totals	38.94	136.10	107.58	28.52

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

**Metamorphosis Wines, LLC Track I ECP
USLE Calculation Sheets**

Metamorphosis Wines, LLC Track I ECP
 USLE Calculations Pre-Project
 PPI Engineering
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Block 1, Transect 1

Proposed Development Acres:	1.31		
Soil Unit No. (100-182):	176		
Soil Name:	Rock Outcrop-Hambright		
K, Soil Erodibility:	0.28		
T, Soil Loss Tolerance (tons/acre):	1		
R, Rainfall:	85		
Total Transect Length (ft):	477		
Number of Segments:	3		
Individual Segment Lengths (ft):	159		
Segment:	1	2	3
Gradient (%):	15	8	6
m:		0.5	0.5
Individual LS:	5.16	2.16	1.47
Factor:	0.19	0.35	0.46
Product:	0.98	0.76	0.67
LS, Length and Steepness:	2.41		
Total Transect Average Gradient (%):	10		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Vegetative Canopy:	Brush 3' Tall		
Canopy Cover:	25%		
Ground Cover:	70%		
Percent Grass:	70%		
Percent Weeds:	30%		
C, Cover (Table 5) ¹ :	0.036		
A, Soil Loss (tons/acre):	2.09		
Soil Loss in Proposed Development (tons):	2.74		

¹ Tables 5 & 6 - USLE Special Applications for Napa County

Metamorphosis Wines, LLC Track I ECP
 USLE Calculations Post-Project
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Block 1, Transect 1

Proposed Development Acres:	1.31		
Soil Unit No. (100-182):	176		
Soil Name:	Rock Outcrop-Hambright		
K, Soil Erodibility:	0.28		
T, Soil Loss Tolerance (tons/acre):	1		
R, Rainfall:	85		
Total Transect Length (ft):	477		
Number of Segments:	3		
Individual Segment Lengths (ft):	159		
Segment:	1	2	3
Gradient (%):	15	8	6
m:		0.5	0.5
Individual LS:	5.16	2.16	1.47
Factor:	0.19	0.35	0.46
Product:	0.98	0.76	0.67
LS, Length and Steepness:	2.41		
Total Transect Average Gradient (%):	10		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Cover Strategy:	Permanent		
Age of Development:	Over 3 Years		
Ground Cover:	75%		
C, Cover (Table 4) ¹ :	0.034		
A, Soil Loss (tons/acre):	1.95		
Soil Loss in Proposed Development (tons):	2.56		

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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Block 2A, Transect 2A

Proposed Development Acres:	4.41
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	85
Total Transect Length (ft):	513
Number of Segments:	1
Individual Segment Lengths (ft):	513
Segment:	
Gradient (%):	10
m:	
Individual LS:	3.07
Factor:	
Product:	
LS, Length and Steepness:	3.07
Total Transect Average Gradient (%):	10
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	Brush 3' Tall
Canopy Cover:	25%
Ground Cover:	70%
Percent Grass:	70%
Percent Weeds:	30%
C, Cover (Table 5) ¹ :	0.036
A, Soil Loss (tons/acre):	2.66
Soil Loss in Proposed Development (tons):	11.75

¹ Tables 5 & 6 - USLE Special Applications for Napa County

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Block 2A, Transect 2A

Proposed Development Acres:	4.41
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	85
Total Transect Length (ft):	513
Number of Segments:	1
Individual Segment Lengths (ft):	513
Segment:	
Gradient (%):	10
m:	
Individual LS:	3.07
Factor:	
Product:	
LS, Length and Steepness:	3.07
Total Transect Average Gradient (%):	10
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	75%
C, Cover (Table 4) ¹ :	0.034
A, Soil Loss (tons/acre):	2.49
Soil Loss in Proposed Development (tons):	10.96

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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 USLE Calculations Pre-Project
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Block 2B, Transect 2B

Proposed Development Acres:	3.77	
Soil Unit No. (100-182):	176	
Soil Name:	Rock Outcrop-Hambright	
K, Soil Erodibility:	0.28	
T, Soil Loss Tolerance (tons/acre):	1	
R, Rainfall:	85	
Total Transect Length (ft):	561	
Number of Segments:	1	
Individual Segment Lengths (ft):	561	
Segment:		
Gradient (%):	12	
m:		
Individual LS:	4.13	
Factor:		
Product:		
LS, Length and Steepness:	4.13	
Total Transect Average Gradient (%):	12	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) ¹ :	1.00	
Segmented C-Value		
Segment:	1	2
Vegetative Canopy:	Brush 3' Tall	No Canopy
Canopy Cover:	75%	0%
Ground Cover:	65%	75%
Percent Grass:	0%	90%
Percent Weeds:	100%	10%
C, Cover (Table 5) ¹ :	0.061	0.024
Segment Factor:	0.35	0.65
Segmented C:	0.037	
A, Soil Loss (tons/acre):	3.61	
Soil Loss in Proposed Development (tons):	13.62	

¹ Tables 5 & 6 - USLE Special Applications for Napa County

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Block 2B, Transect 2B

Proposed Development Acres:	3.77
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	85
Total Transect Length (ft):	561
Number of Segments:	1
Individual Segment Lengths (ft):	561
Segment:	
Gradient (%):	12
m:	
Individual LS:	4.13
Factor:	
Product:	
LS, Length and Steepness:	4.13
Total Transect Average Gradient (%):	12
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	75%
C, Cover (Table 4) ¹ :	0.034
A, Soil Loss (tons/acre):	3.34
Soil Loss in Proposed Development (tons):	12.59

¹ Tables 4 & 6 - USLE Special Applications for Napa County

Metamorphosis Wines, LLC Track I ECP
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Block 2C, Transect 2C-1

Proposed Development Acres:	8.76		
Soil Unit No. (100-182):	176		
Soil Name:	Rock Outcrop-Hambright		
K, Soil Erodibility:	0.28		
T, Soil Loss Tolerance (tons/acre):	1		
R, Rainfall:	85		
Total Transect Length (ft):	748		
Number of Segments:	3		
Individual Segment Lengths (ft):	249		
Segment:	1	2	3
Gradient (%):	4	8	11
m:	0.4	0.5	
Individual LS:	0.89	2.71	4.23
Factor:	0.19	0.35	0.46
Product:	0.17	0.95	1.95
LS, Length and Steepness:	3.06		
Total Transect Average Gradient (%):	8		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Segmented C-Value			
Segment	1	2	3
Vegetative Canopy:	No Canopy	Brush 3' Tall	Brush 3' Tall
Canopy Cover:	0%	50%	50%
Ground Cover:	70%	70%	70%
Percent Grass:	60%	60%	60%
Percent Weeds:	40%	40%	40%
C, Cover (Table 5) ¹ :	0.043	0.037	0.037
Segment Factor:	0.19	0.35	0.46
Segmented C:	0.038		
A, Soil Loss (tons/acre):	2.78		
Soil Loss in Proposed Development (tons):	24.39		

¹ Tables 5 & 6 - USLE Special Applications for Napa County

Metamorphosis Wines, LLC Track I ECP
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Block 2C, Transect 2C-1

Proposed Development Acres:	8.76		
Soil Unit No. (100-182):	176		
Soil Name:	Rock Outcrop-Hambright		
K, Soil Erodibility:	0.28		
T, Soil Loss Tolerance (tons/acre):	1		
R, Rainfall:	85		
Total Transect Length (ft):	748		
Number of Segments:	3		
Individual Segment Lengths (ft):	249		
Segment:	1	2	3
Gradient (%):	4	8	11
m:	0.4	0.5	
Individual LS:	0.89	2.71	4.23
Factor:	0.19	0.35	0.46
Product:	0.17	0.95	1.95
LS, Length and Steepness:	3.06		
Total Transect Average Gradient (%):	8		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Cover Strategy:	Permanent		
Age of Development:	Over 3 Years		
Ground Cover:	75%		
C, Cover (Table 4) ¹ :	0.034		
A, Soil Loss (tons/acre):	2.48		
Soil Loss in Proposed Development (tons):	21.71		

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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Block 2C, Transect 2C-2

Proposed Development Acres:	3.35		
Soil Unit No. (100-182):	176		
Soil Name:	Rock Outcrop-Hambright		
K, Soil Erodibility:	0.28		
T, Soil Loss Tolerance (tons/acre):	1		
R, Rainfall:	85		
Total Transect Length (ft):	887		
Number of Segments:	3		
Individual Segment Lengths (ft):	296		
Segment:	1	2	3
Gradient (%):	3	6	13
m:	0.3	0.5	
Individual LS:	0.55	2.00	5.79
Factor:	0.19	0.35	0.46
Product:	0.10	0.70	2.66
LS, Length and Steepness:	3.47		
Total Transect Average Gradient (%):	7		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Segmented C-Value			
Segment:	1	2	
Vegetative Canopy:	No Canopy	Brush 3' Tall	
Canopy Cover:	0%	75%	
Ground Cover:	70%	65%	
Percent Grass:	60%	0%	
Percent Weeds:	40%	100%	
C, Cover (Table 5) ¹ :	0.043	0.061	
Segment Factor:	0.35	0.65	
Segmented C:	0.055		
A, Soil Loss (tons/acre):	4.53		
Soil Loss in Proposed Development (tons):	15.16		

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Block 2C, Transect 2C-2

Proposed Development Acres:	3.35		
Soil Unit No. (100-182):	176		
Soil Name:	Rock Outcrop-Hambright		
K, Soil Erodibility:	0.28		
T, Soil Loss Tolerance (tons/acre):	1		
R, Rainfall:	85		
Total Transect Length (ft):	887		
Number of Segments:	3		
Individual Segment Lengths (ft):	296		
Segment:	1	2	3
Gradient (%):	3	6	13
m:	0.3	0.5	
Individual LS:	0.55	2.00	5.79
Factor:	0.19	0.35	0.46
Product:	0.10	0.70	2.66
LS, Length and Steepness:	3.47		
Total Transect Average Gradient (%):	7		
Farming Practice:	Up & Down Hill		
P, Practice Factor (Table 6) ¹ :	1.00		
Cover Strategy:	Permanent		
Age of Development:	Over 3 Years		
Ground Cover:	75%		
C, Cover (Table 4) ¹ :	0.034		
A, Soil Loss (tons/acre):	2.81		
Soil Loss in Proposed Development (tons):	9.41		

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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Block 2C, Transect 2C-3

Proposed Development Acres:	1.47
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	85
Total Transect Length (ft):	178
Number of Segments:	1
Individual Segment Lengths (ft):	178
Segment:	
Gradient (%):	9
m:	0.5
Individual LS:	1.56
Factor:	
Product:	
LS, Length and Steepness:	1.56
Total Transect Average Gradient (%):	9
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	Brush 3' Tall
Canopy Cover:	25%
Ground Cover:	70%
Percent Grass:	70%
Percent Weeds:	30%
C, Cover (Table 5) ¹ :	0.036
A, Soil Loss (tons/acre):	1.35
Soil Loss in Proposed Development (tons):	1.99

¹ Tables 5 & 6 - USLE Special Applications for Napa County

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Block 2C, Transect 2C-3

Proposed Development Acres:	1.47
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	85
Total Transect Length (ft):	178
Number of Segments:	1
Individual Segment Lengths (ft):	178
Segment:	
Gradient (%):	9
m:	0.5
Individual LS:	1.56
Factor:	
Product:	
LS, Length and Steepness:	1.56
Total Transect Average Gradient (%):	9
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	75%
C, Cover (Table 4) ¹ :	0.034
A, Soil Loss (tons/acre):	1.26
Soil Loss in Proposed Development (tons):	1.86

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Block 3, Transect 3

Proposed Development Acres:	1.84	
Soil Unit No. (100-182):	176	
Soil Name:	Rock Outcrop-Hambright	
K, Soil Erodibility:	0.28	
T, Soil Loss Tolerance (tons/acre):	1	
R, Rainfall:	85	
Total Transect Length (ft):	288	
Number of Segments:	2	
Individual Segment Lengths (ft):	144	
Segment:	1	2
Gradient (%):	10	16
m:		
Individual LS:	2.30	4.38
Factor:	0.35	0.65
Product:	0.81	2.85
LS, Length and Steepness:	3.65	
Total Transect Average Gradient (%):	13	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) ¹ :	1.00	
Vegetative Canopy:	Brush 6.5' Tall	
Canopy Cover:	25%	
Ground Cover:	65%	
Percent Grass:	40%	
Percent Weeds:	60%	
C, Cover (Table 5) ¹ :	0.059	
A, Soil Loss (tons/acre):	5.11	
Soil Loss in Proposed Development (tons):	9.39	

¹ Tables 5 & 6 - USLE Special Applications for Napa County

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Block 3, Transect 3

Proposed Development Acres:	1.84	
Soil Unit No. (100-182):	176	
Soil Name:	Rock Outcrop-Hambright	
K, Soil Erodibility:	0.28	
T, Soil Loss Tolerance (tons/acre):	1	
R, Rainfall:	85	
Total Transect Length (ft):	288	
Number of Segments:	2	
Individual Segment Lengths (ft):	144	
Segment:	1	2
Gradient (%):	10	16
m:		
Individual LS:	2.30	4.38
Factor:	0.35	0.65
Product:	0.81	2.85
LS, Length and Steepness:	3.65	
Total Transect Average Gradient (%):	13	
Farming Practice:	Up & Down Hill	
P, Practice Factor (Table 6) ¹ :	1.00	
Cover Strategy:	Permanent	
Age of Development:	Over 3 Years	
Ground Cover:	75%	
C, Cover (Table 4) ¹ :	0.034	
A, Soil Loss (tons/acre):	2.95	
Soil Loss in Proposed Development (tons):	5.44	

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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Block 4, Transect 4

Proposed Development Acres:	2.11
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	90
Total Transect Length (ft):	207
Number of Segments:	1
Individual Segment Lengths (ft):	207
Segment:	
Gradient (%):	7
m:	0.5
Individual LS:	1.18
Factor:	
Product:	
LS, Length and Steepness:	1.18
Total Transect Average Gradient (%):	7
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	No Canopy
Canopy Cover:	0%
Ground Cover:	65%
Percent Grass:	40%
Percent Weeds:	60%
C, Cover (Table 5) ¹ :	0.061
A, Soil Loss (tons/acre):	1.83
Soil Loss in Proposed Development (tons):	3.86

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Block 4, Transect 4

Proposed Development Acres:	2.11
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	90
Total Transect Length (ft):	207
Number of Segments:	1
Individual Segment Lengths (ft):	207
Segment:	
Gradient (%):	7
m:	0.5
Individual LS:	1.18
Factor:	
Product:	
LS, Length and Steepness:	1.18
Total Transect Average Gradient (%):	7
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	75%
C, Cover (Table 4) ¹ :	0.034
A, Soil Loss (tons/acre):	1.01
Soil Loss in Proposed Development (tons):	2.14

¹ Tables 4 & 6 - USLE Special Applications for Napa County

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Block 5, Transect 5A

Proposed Development Acres:	9.54
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	90
Total Transect Length (ft):	487
Number of Segments:	1
Individual Segment Lengths (ft):	487
Segment:	
Gradient (%):	14
m:	
Individual LS:	4.75
Factor:	
Product:	
LS, Length and Steepness:	4.75
Total Transect Average Gradient (%):	14
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	Brush 3' Tall
Canopy Cover:	75%
Ground Cover:	70%
Percent Grass:	30%
Percent Weeds:	70%
C, Cover (Table 5) ¹ :	0.044
A, Soil Loss (tons/acre):	5.21
Soil Loss in Proposed Development (tons):	49.73

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Block 5, Transect 5A

Proposed Development Acres:	9.54
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	90
Total Transect Length (ft):	487
Number of Segments:	1
Individual Segment Lengths (ft):	487
Segment:	
Gradient (%):	14
m:	
Individual LS:	4.75
Factor:	
Product:	
LS, Length and Steepness:	4.75
Total Transect Average Gradient (%):	14
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	75%
C, Cover (Table 4) ¹ :	0.034
A, Soil Loss (tons/acre):	4.07
Soil Loss in Proposed Development (tons):	38.82

¹ Tables 4 & 6 - USLE Special Applications for Napa County

Metamorphosis Wines, LLC Track I ECP
 USLE Calculations Pre-Project
 PPI Engineering
 7/11/2018
 ALB

Block 5, Transect 5B

Proposed Development Acres:	2.38
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	90
Total Transect Length (ft):	156
Number of Segments:	1
Individual Segment Lengths (ft):	156
Segment:	1
Gradient (%):	7
m:	0.5
Individual LS:	1.03
Factor:	
Product:	
LS, Length and Steepness:	1.03
Total Transect Average Gradient (%):	7
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	Brush 3' Tall
Canopy Cover:	25%
Ground Cover:	65%
Percent Grass:	40%
Percent Weeds:	60%
C, Cover (Table 5) ¹ :	0.056
A, Soil Loss (tons/acre):	1.46
Soil Loss in Proposed Development (tons):	3.47

¹ Tables 5 & 6 - USLE Special Applications for Napa County

Metamorphosis Wines, LLC Track I ECP
 USLE Calculations Post-Project
 PPI Engineering
 7/11/2018
 ALB

Block 5, Transect 5B

Proposed Development Acres:	2.38
Soil Unit No. (100-182):	176
Soil Name:	Rock Outcrop-Hambright
K, Soil Erodibility:	0.28
T, Soil Loss Tolerance (tons/acre):	1
R, Rainfall:	90
Total Transect Length (ft):	156
Number of Segments:	1
Individual Segment Lengths (ft):	156
Segment:	1
Gradient (%):	7
m:	0.5
Individual LS:	1.03
Factor:	
Product:	
LS, Length and Steepness:	1.03
Total Transect Average Gradient (%):	7
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Cover Strategy:	Permanent
Age of Development:	Over 3 Years
Ground Cover:	75%
C, Cover (Table 4) ¹ :	0.034
A, Soil Loss (tons/acre):	0.88
Soil Loss in Proposed Development (tons):	2.10

¹ Tables 4 & 6 - USLE Special Applications for Napa County

Metamorphosis Wines, LLC Track I ECP

USLE Calculations

PPI Engineering

7/11/2018

CC

SCS MAPPING UNIT

#	K	T	SOIL NAME
100	0.24	3	Aiken
101	0.24	3	Aiken
102	0.24	3	Aiken
103	0.24	5	Bale
104	0.2	5	Bale
105	0.2	5	Bale
106	0.24	5	Bale
107	0.32	4	Boomer
108	0.15	4	Boomer
109	0.15	4	Boomer
110	0.28	4	Boomer-Forward-Felta
111	0.28	4	Boomer-Forward-Felta
112	0.43	3	Bressa-Dibble
113	0.43	3	Bressa-Dibble
114	0.43	3	Bressa-Dibble
115	0.43	3	Bressa-Dibble
116	0.17	5	Clear Lake
117	0.32	3	Clear Lake
118	0.43	5	Cole
119	0.43	5	Cole
120	0.37	3	Contra Costa
121	0.24	2	Contra Costa
122	0.2	4	Coombs
123	0.2	4	Coombs
124	0.15	2	Cortina
125	0.1	5	Cortina
126	0.2	5	Diablo
127	0.2	5	Diablo
128	0.2	5	Diablo
129	0.24	5	Diablo
130	0.32	5	Egbert
131	0.32	4	Fagan
132	0.32	4	Fagan
133	0.32	4	Fagan
134	0.32	4	Fagan
135	0.15	3	Felton
136	0.15	3	Felton
137	0.15	3	Felton
138	0.2	3	Forward

Metamorphosis Wines, LLC Track I ECP

USLE Calculations

PPI Engineering

7/11/2018

CC

SCS MAPPING UNIT

#	K	T	SOIL NAME
139	0.17	3	Forward
140	0.17	3	Forward
141	0.17	3	Forward-Kidd
142	0.37	2	Guenoc
143	0.37	2	Guenoc-Rock Outcrop
144	0.37	2	Guenoc-Rock Outcrop
145	0.32	4	Haire
146	0.32	4	Haire
147	0.28	4	Haire
148	0.28	4	Haire
149	0.28	4	Haire
150	0.28	4	Haire
151	0.1	1	Hambright-Rock Outcrop
152	0.1	1	Hambright-Rock Outcrop
153	0.1	1	Henneke
154	0.1	1	Henneke
155	0.28	2	Kidd
156	0.28	2	Kidd
157	0.24	1	Lodo-Maymen-Felton
158	0.28	2	Los Gatos
159	0.28	2	Los Gatos
160	0.28	2	Los Gatos
161	0.24	5	Maxwell
162	0.17	1	Maymen-Los Gatos
163	0.32	1	Maymen-Millsholm-Lodo
164	0.32	1	Millsholm
165	0.32	1	Millsholm
166	0.28	1	Montara
167	0.28	1	Montara
168	0.15	5	Perkins
169	0.15	5	Perkins
170	0.43	5	Pleasanton
171	0.28	4	Pleasanton
172	0.28	5	Reyes
173	0.28	5	Reyes
174	0.05	5	Riverwash
175		1	Rock Outcrop
176	0.28	1	Rock Outcrop-Hambright
177	0.28	1	Rock Outcrop-Kidd

Metamorphosis Wines, LLC Track I ECP

USLE Calculations

PPI Engineering

7/11/2018

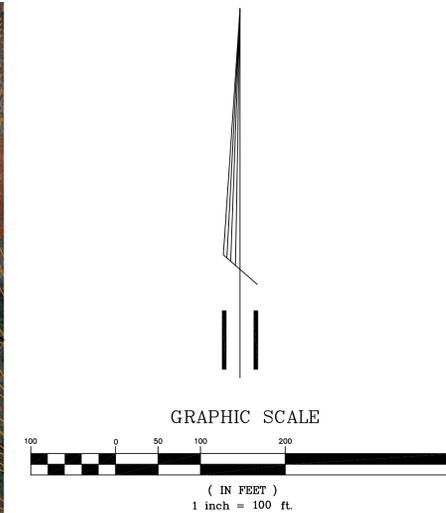
CC

SCS MAPPING UNIT

#	K	T	SOIL NAME
178	0.32	2	Sobrante
179	0.32	2	Sobrante
180	0.55	5	Tehama
181	0.43	5	Yolo
182	0.43	5	Yolo



TOPOGRAPHIC MAPPING PROVIDED BY AMERICAN AERIAL MAPPING, INC. OCTOBER 2017. 2' CONTOUR INTERVAL.
2014 NAPA COUNTY ORTHOPHOTO



LEGEND

- EPHEMERAL STREAM, MAPPED BY WRA
- EPHEMERAL STREAM, ASSUMED LOCATION BY PPI
- U.S.G.S BLUE LINE STREAM
- EXISTING WETLAND, MAPPED BY WRA
- EXISTING POND, MAPPED BY WRA
- EXISTING ROAD
- EXISTING BUILDING
- PROPOSED VINEYARD DEVELOPMENT AREA BY TRANSECT
- PROPOSED VINEYARD BLOCK BOUNDARY
- USLE TRANSECT WITH SLOPE
- PROPOSED VINEYARD DIRECTION
- PROPOSED ROCK FILLED AVENUE/LEVEL SPREADER
- SOIL TYPE BOUNDARY

USDA SOIL CLASSIFICATIONS:

- 176 ROCK OUTCROP-HAMBRIGHT COMPLEX, 50-75% SLOPES
- 178 SOBRANTE LOAM, 5-30% SLOPE

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 <small>2800 JEFFERSON STREET NAPA, CA 94558 707/253-1806 FAX 707/253-1604</small>	METAMORPHOSIS WINES LLC			
	OVID VINEYARDS			
	EROSION CONTROL PLAN			
	SOIL LOSS ANALYSIS			
<small>DESIGN ENGINEER:</small>				
J. BUSHEY, A. LEMIRE-BAETEN				
<small>JOB NO:</small> 11712801	<small>SCALE:</small> AS SHOWN	<small>DRAWN BY:</small> JCJ, ALB	<small>DATE:</small> 7-11-18	<small>SHEET:</small> 1
<small>DWG. NO:</small> 11712801USLE		<small>OF:</small> 1		