



VINEYARD DESIGN  
EROSION CONTROL  
WATER DEVELOPMENT  
DRAINAGE  
PERMITTING  
GPS/GIS

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## MEMORANDUM

Date: January 20, 2022

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

From: Matthew Bueno, P.E.  
Sam Moose

Cc: John McDowell, Napa County Planning, Building, and Environmental Services

Re: Austin Peterson Track I ECP  
3496 Soda Canyon Road  
APN 032-500-025  
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 August 6, 2021 by PPI Engineering staff 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 (7.2 gross acres).

The model, summarized on page 2 of the supporting documents (attached), predicts a net decrease of approximately 0.6 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-increase 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.



**Austin Peterson Track I ECP**  
**USLE Calculation Sheets**

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USLE Calculations  
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**USLE Calculations - Block Summary Sheet**

| Proposed Block | Proposed<br>Development<br>Acres | Pre-Project Soil Loss<br>(tons/year) | Post-Project Soil<br>Loss (tons/year) | Net<br>Increase/Decrease<br>(tons/year) |
|----------------|----------------------------------|--------------------------------------|---------------------------------------|-----------------------------------------|
| 1              | 6.06                             | 3.63                                 | 3.00                                  | 0.63                                    |
| 2              | 1.14                             | 1.18                                 | 1.18                                  | 0.00                                    |
| <b>Totals</b>  | 7.20                             | 4.81                                 | 4.18                                  | 0.63                                    |

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

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## Pre-Project, Block 1

|                                             |                        |                            |                            |
|---------------------------------------------|------------------------|----------------------------|----------------------------|
| Proposed Development Acres:                 | 6.06                   |                            |                            |
| Soil Unit No. (100-182):                    | 143                    | 176                        | 176                        |
| Soil Name:                                  | Guenoc-Rock<br>Outcrop | Rock Outcrop-<br>Hambright | Rock Outcrop-<br>Hambright |
| K, Soil Erodibility:                        | 0.37                   | 0.1                        | 0.1                        |
| T, Soil Loss Tolerance (tons/acre):         | 2                      | 1                          | 1                          |
| R, Rainfall:                                | 85                     |                            |                            |
| Total Transect Length (ft):                 | 266                    |                            |                            |
| Number of Segments:                         | 3                      |                            |                            |
| Individual Segment Lengths (ft):            | 89                     |                            |                            |
| Segment:                                    | 1                      | 2                          | 3                          |
| Gradient (%):                               | 8                      | 10                         | 8                          |
| m:                                          | 0.5                    |                            | 0.5                        |
| Individual LS:                              | 1.61                   | 2.21                       | 1.61                       |
| Segment Factor:                             | 0.19                   | 0.35                       | 0.46                       |
| Segmented K*LS                              | 0.27                   |                            |                            |
| Farming Practice:                           | Up & Down Hill         |                            |                            |
| P, Practice Factor (Table 6) <sup>1</sup> : | 1.00                   |                            |                            |
| Vegetative Canopy:                          | Trees 13' Tall         |                            |                            |
| Canopy Cover:                               | 75%                    |                            |                            |
| Ground Cover:                               | 85%                    |                            |                            |
| Percent Grass:                              | 20%                    |                            |                            |
| Percent Weeds:                              | 80%                    |                            |                            |
| C, Cover (Table 5) <sup>1</sup> :           | 0.027                  |                            |                            |
| A, Soil Loss (tons/acre):                   | 0.60                   |                            |                            |
| Soil Loss in Proposed Development (tons):   | 3.63                   |                            |                            |

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

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## Post-Project, Block 1

|                                             |                        |                            |                            |
|---------------------------------------------|------------------------|----------------------------|----------------------------|
| Proposed Development Acres:                 | 6.06                   |                            |                            |
| Soil Unit No. (100-182):                    | 143                    | 176                        | 176                        |
| Soil Name:                                  | Guenoc-Rock<br>Outcrop | Rock Outcrop-<br>Hambright | Rock Outcrop-<br>Hambright |
| K, Soil Erodibility:                        | 0.37                   | 0.1                        | 0.1                        |
| T, Soil Loss Tolerance (tons/acre):         | 2                      | 1                          | 1                          |
| R, Rainfall:                                | 85                     |                            |                            |
| Total Transect Length (ft):                 | 266                    |                            |                            |
| Number of Segments:                         | 3                      |                            |                            |
| Individual Segment Lengths (ft):            | 89                     |                            |                            |
| Segment:                                    | 1                      | 2                          | 3                          |
| Gradient (%):                               | 8                      | 10                         | 8                          |
| m:                                          | 0.5                    |                            | 0.5                        |
| Individual LS:                              | 1.61                   | 2.21                       | 1.61                       |
| Factor:                                     | 0.19                   | 0.35                       | 0.46                       |
| Segmented K*LS                              | 0.27                   |                            |                            |
| 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):                   | 0.50                   |                            |                            |
| Soil Loss in Proposed Development (tons):   | 3.00                   |                            |                            |

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

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## Pre-Project, Block 2

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|                                             |                     |
|---------------------------------------------|---------------------|
| Proposed Development Acres:                 | 1.14                |
| Soil Unit No. (100-182):                    | 143                 |
| Soil Name:                                  | Guenoc-Rock Outcrop |
| K, Soil Erodibility:                        | 0.37                |
| T, Soil Loss Tolerance (tons/acre):         | 2                   |
| R, Rainfall:                                | 85                  |
| Total Transect Length (ft):                 | 330                 |
| Number of Segments:                         | 1                   |
| Individual Segment Lengths (ft):            | 330                 |
| Segment:                                    |                     |
| Gradient (%):                               | 7                   |
| m:                                          | 0.5                 |
| Individual LS:                              | 1.50                |
| Factor:                                     |                     |
| Product:                                    |                     |
| LS, Length and Steepness:                   | 1.50                |
| Total Transect Average Gradient (%):        | 7                   |
| Farming Practice:                           | Up & Down Hill      |
| P, Practice Factor (Table 6) <sup>1</sup> : | 1.00                |
| Vegetative Canopy:                          | Trees 13' Tall      |
| Canopy Cover:                               | 75%                 |
| Ground Cover:                               | 75%                 |
| Percent Grass:                              | 90%                 |
| Percent Weeds:                              | 10%                 |
| C, Cover (Table 5) <sup>1</sup> :           | 0.022               |
| A, Soil Loss (tons/acre):                   | 1.04                |
| Soil Loss in Proposed Development (tons):   | 1.18                |

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

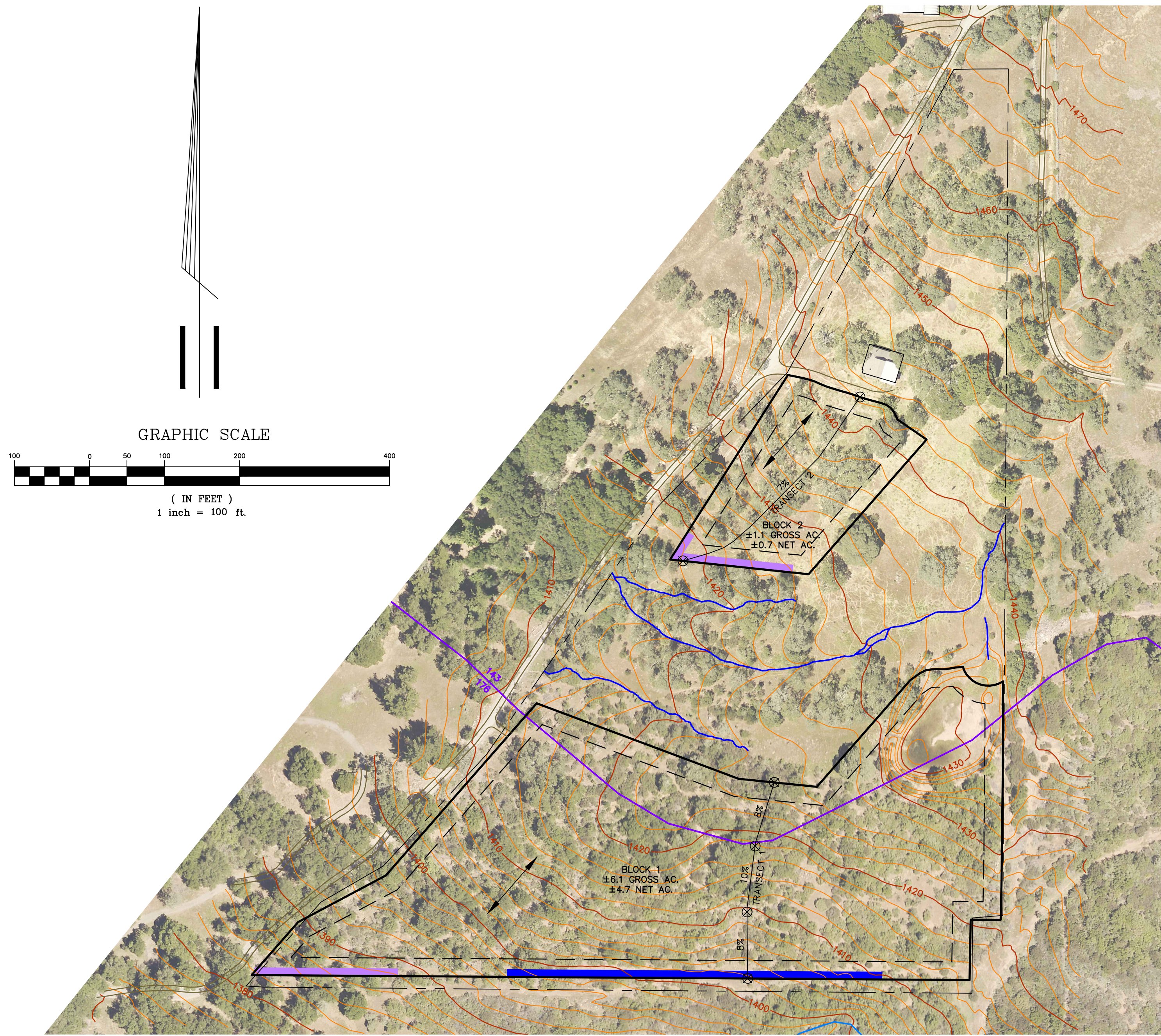
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## Post-Project, Block 2

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|                                             |                     |
|---------------------------------------------|---------------------|
| Proposed Development Acres:                 | 1.14                |
| Soil Unit No. (100-182):                    | 143                 |
| Soil Name:                                  | Guenoc-Rock Outcrop |
| K, Soil Erodibility:                        | 0.37                |
| T, Soil Loss Tolerance (tons/acre):         | 2                   |
| R, Rainfall:                                | 85                  |
| Total Transect Length (ft):                 | 330                 |
| Number of Segments:                         | 1                   |
| Individual Segment Lengths (ft):            | 330                 |
| Segment:                                    |                     |
| Gradient (%):                               | 7                   |
| m:                                          | 0.5                 |
| Individual LS:                              | 1.50                |
| Factor:                                     |                     |
| Product:                                    |                     |
| LS, Length and Steepness:                   | 1.50                |
| Total Transect Average Gradient (%):        | 7                   |
| 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):                   | 1.03                |
| Soil Loss in Proposed Development (tons):   | 1.18                |

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



2' CONTOUR TOPOGRAPHIC MAPPING PROVIDED BY AMERICAN AERIAL MAPPING, INC., 10-15-2012  
2018 NAPA COUNTY ORTHOPHOTO

### LEGEND

- APPROXIMATE PROPERTY LINE LOCATION
- U.S.G.S. BLUE LINE STREAM
- WATERS OF THE U.S. AS MAPPED BY TRA ENVIRONMENTAL SCIENCES
- EXISTING ROAD
- EXISTING BUILDING
- PROPOSED VINEYARD DEVELOPMENT AREA BY TRANSECT
- PROPOSED VINEYARD BLOCK BOUNDARY
- PROPOSED ROCK LEVEL SPREADER
- PROPOSED ROCK FILLED AVENUE
- USLE TRANSECT SEGMENT WITH SLOPE
- PROPOSED VNEROW DIRECTION
- SOIL TYPE BOUNDARY

### USDA SOIL CLASSIFICATIONS:

- 143 GUENOC-ROCK OUTCROP COMPLEX, 5-30% SLOPES
- 176 ROCK OUTCROP-HAMBRIGHT COMPLEX, 50-75% SLOPES

AUSTIN PETERSON  
3496 SODA CANYON ROAD

EROSION CONTROL PLAN  
SOIL LOSS ANALYSIS

DESIGN ENGINEER:  
M. BUENO, J. BUSHEY

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SCALE: AS SHOWN

DRAWN BY: JCJ, SM

DATE: 01-20-22

SHEET: 1

OF: 1