



VINEYARD DESIGN
EROSION CONTROL
WATER DEVELOPMENT
DRAINAGE
PERMITTING
GPS/GIS

2800 Jefferson Street
Napa, California 94558
707-253-1806
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MEMORANDUM

Date: March 11, 2021

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

From: James R. Bushey, P.E.
Cody J. Corsetti, P.E.

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

Re: Veeder Ridge LLC Track I ECP
3665 Redwood Road
APN 035-080-027
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 4, 2020 by Cody Corsetti 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 for Block 3 at the time of the site visit. Block 1A was planted without the benefit of an Erosion Control Plan. Pre-project canopy conditions were determined using aerial imagery from 1993 before the vineyard existed, while ground cover values were determined via existing site conditions at the time of the site visit (ground cover was assumed to match Block 3). Post-project cover values for both blocks were calculated using the percent cover specified in the ECP. This analysis is limited to the proposed vineyard areas as well as vineyard avenues (3.1 gross acres).

The model, summarized on page 2 of the supporting documents (attached), predicts a net decrease of approximately 2.15 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.



SUPPORTING DOCUMENTS

**Veeder Ridge LLC Track I ECP
USLE Analysis**

Veeder Ridge LLC Track I ECP
USLE Calculations
PPI Engineering
3/11/2021
SM

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)
1A	0.55	0.98	0.94	0.03
3	2.55	5.01	2.90	2.11
Totals	3.10	5.99	3.85	2.15

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

Veeder Ridge LLC Track I ECP
USLE Calculations Pre-Project
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Pre-Project, Block 1A

Proposed Development Acres:	0.55
Soil Unit No. (100-182):	136
Soil Name:	Felton
K, Soil Erodibility:	0.15
T, Soil Loss Tolerance (tons/acre):	3
R, Rainfall:	65
Total Transect Length (ft):	101
Number of Segments:	1
Individual Segment Lengths (ft):	101
Segment:	
Gradient (%):	27
m:	
Individual LS:	5.17
Factor:	
Product:	
LS, Length and Steepness:	5.17
Total Transect Average Gradient (%):	27
Farming Practice:	Up & Down Hill
P, Practice Factor (Table 6) ¹ :	1.00
Vegetative Canopy:	Trees 13' Tall
Canopy Cover:	75%
Ground Cover:	75%
Percent Grass:	50%
Percent Weeds:	50%
C, Cover (Table 5) ¹ :	0.035
A, Soil Loss (tons/acre):	1.78
Soil Loss in Proposed Development (tons):	0.98

¹ Tables 5 & 6 - USLE Special Applications for Napa County
Note: Estimates may vary slightly due to rounding

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USLE Calculations Post-Project
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Post-Project, Block 1A

Proposed Development Acres:	0.55
Soil Unit No. (100-182):	136
Soil Name:	Felton
K, Soil Erodibility:	0.15
T, Soil Loss Tolerance (tons/acre):	3
R, Rainfall:	65
Total Transect Length (ft):	101
Number of Segments:	1
Individual Segment Lengths (ft):	101
Segment:	
Gradient (%):	27
m:	
Individual LS:	5.17
Factor:	
Product:	
LS, Length and Steepness:	5.17
Total Transect Average Gradient (%):	27
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):	1.71
Soil Loss in Proposed Development (tons):	0.94

¹ Tables 4 & 6 - USLE Special Applications for Napa County
Note: Estimates may vary slightly due to rounding

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 USLE Calculations Pre-Project
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Pre-Project, Block 3

Proposed Development Acres:	2.55				
Soil Unit No. (100-182):	136	113	113	113	113
Soil Name:	Felton	Bressa-Dibble	Bressa-Dibble	Bressa-Dibble	Bressa-Dibble
K, Soil Erodibility:	0.15	0.43	0.43	0.43	0.43
T, Soil Loss Tolerance (tons/acre):	3	3	3	3	3
R, Rainfall:	65				
Total Transect Length (ft):	265				
Number of Segments:	5				
Individual Segment Lengths (ft):	53				
Segment:	1	2	3	4	5
Gradient (%):	19	19	9	6	4
m:			0.5	0.5	0.4
Individual LS:	5.29	5.29	1.91	1.09	0.59
Segment Factor:	0.09	0.16	0.21	0.25	0.28
Segmented K*(LS)	0.80				
Farming Practice:	Up & Down Hill				
P, Practice Factor (Table 6) ¹ :	1.00				
Vegetative Canopy:	No Canopy				
Canopy Cover:	0%				
Ground Cover:	75%				
Percent Grass:	50%				
Percent Weeds:	50%				
C, Cover (Table 5) ¹ :	0.038				
A, Soil Loss (tons/acre):	1.97				
Soil Loss in Proposed Development (tons):	5.01				

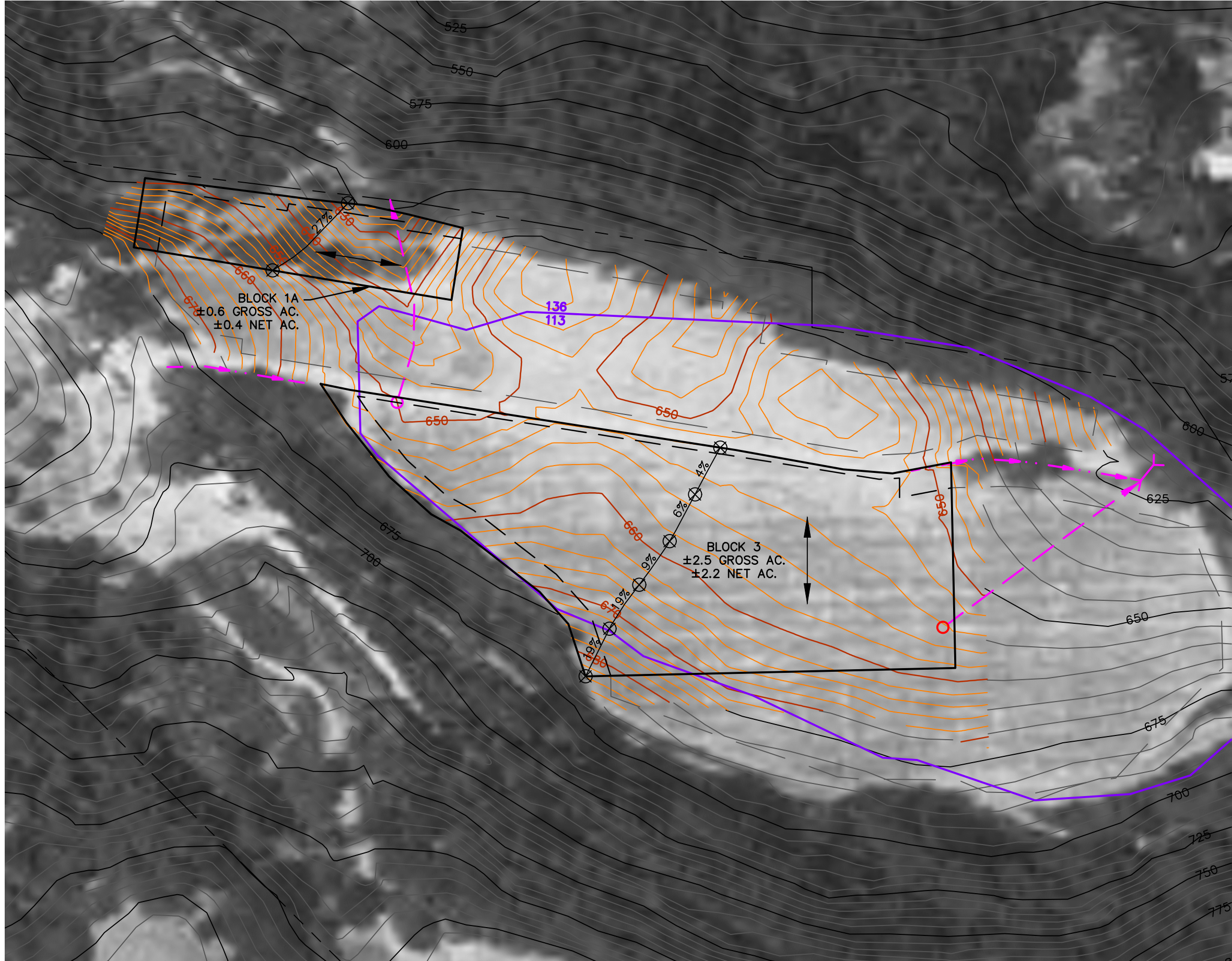
¹ Tables 5 & 6 - USLE Special Applications for Napa County
 Note: Estimates may vary slightly due to rounding

Veeder Ridge LLC Track I ECP
 USLE Calculations Post-Project
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Post-Project, Block 3

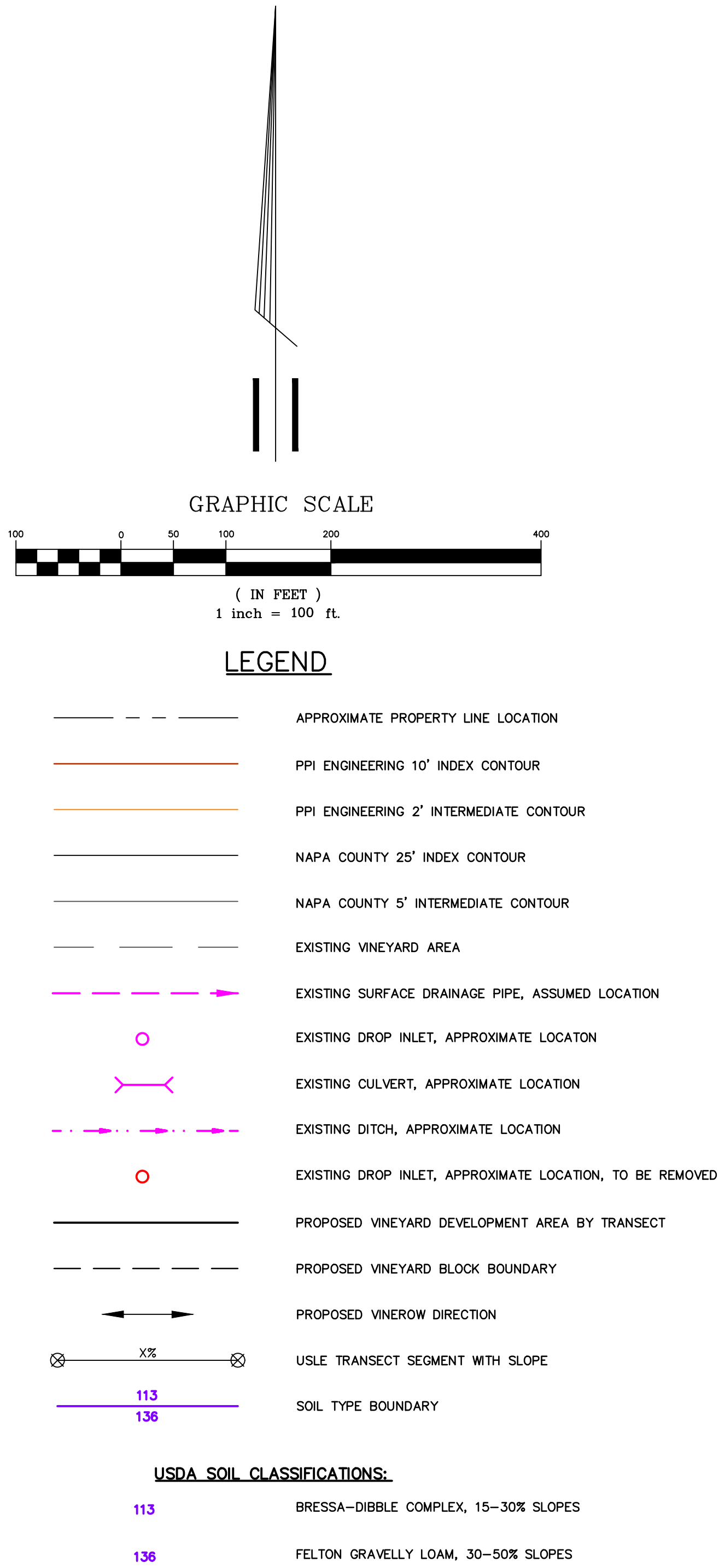
Proposed Development Acres:	2.55				
Soil Unit No. (100-182):	136	113	113	113	113
Soil Name:	Felton	Bressa-Dibble	Bressa-Dibble	Bressa-Dibble	Bressa-Dibble
K, Soil Erodibility:	0.15	0.43	0.43	0.43	0.43
T, Soil Loss Tolerance (tons/acre):	3	3	3	3	3
R, Rainfall:	65				
Total Transect Length (ft):	265				
Number of Segments:	5				
Individual Segment Lengths (ft):	53				
Segment:	1	2	3	4	5
Gradient (%):	19	19	9	6	4
m:			0.5	0.5	0.4
Individual LS:	5.29	5.29	1.91	1.09	0.59
Segment Factor:	0.09	0.16	0.21	0.25	0.28
Segmented K*(LS):	0.80				
Farming Practice:	Up & Down Hill				
P, Practice Factor (Table 6) ¹ :	1.00				
Cover Strategy:	Permanent				
Age of Development:	Over 3 Years				
Ground Cover:	80%				
C, Cover (Table 4) ¹ :	0.022				
A, Soil Loss (tons/acre):	1.14				
Soil Loss in Proposed Development (tons):	2.90				

¹ Tables 4 & 6 - USLE Special Applications for Napa County
 Note: Estimates may vary slightly due to rounding



TOPOGRAPHIC MAPPING SOURCE: PPI ENGINEERING, 2' CONTOUR INTERVAL, AUGUST/OCTOBER 2020
NAPA COUNTY LIDAR-GENERATED CONTOURS, 5' CONTOUR INTERVAL, MAY 2003

1993 NAPA COUNTY AERIAL PHOTO



TOPOGRAPHIC MAPPING SOURCE: PPI ENGINEERING, 2' CONTOUR INTERVAL, AUGUST/OCTOBER 2020
NAPA COUNTY LIDAR-GENERATED CONTOURS, 5' CONTOUR INTERVAL, MAY 2003

2018 NAPA COUNTY AERIAL PHOTO



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NAPA, CA 94558
707/253-1806 FAX 707/253-1804

JOB NO: 12012501

DWG. NO: 12012501U

VEEDER RIDGE LLC
3665 REDWOOD ROAD

TRACK I EROSION CONTROL PLAN
SOIL LOSS ANALYSIS

DESIGN ENGINEER:
J. BUSHEY, C. CORSETTI

SCALE:

AS SHOWN

DRAWN BY:
SM

DATE:

3-11-21

SHEET: 1

OF: 1