

Atlas Rock Vineyard
3380 Atlas Peak Road - USLE Analysis
Prepared by Napa Valley Vineyard Engineering, Inc
December 16, 2021

INTRODUCTION

Atlas Rock seeks approval of approximately 1.59 net acres of proposed vineyard. The project lies within APN 033-010-059, a parcel totaling about 4.84 acres, located at 3380 Atlas Peak Road, Napa.

This analysis is to predict the affect the proposed vineyard development project will have on local soil erosion. Modeling of existing and proposed conditions was performed using the Universal Soil Loss Equation (USLE). Following is a summary of the data used and the results of the analysis.

RAINFALL DATA

The 2 year, 6 hour rainfall depth is used to determine the “R” value in the USLE. The rainfall depth for the project site was obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 6, Version 2, Precipitation Frequency Data for California, which uses the latitude and longitude of a site to interpolate rainfall depths between data points. The latitude and longitude of the Venge Vineyard project are estimated to be, 38.4014° N, -122.2405° W, based on information obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Frequency Data. The 2 year, 6 hour rainfall depth at the project site ranges from 1.76-inches to 2.25-inches. This analysis conservatively uses the high end of the range (2.25-inches), which equals an “R” value of 100. “R” is constant in the pre-project and post-project models.

SOIL EROSIVENESS

Each soil type listed in the United States Department of Agriculture, Soil Conservation Service (SCS), Napa County Soil Survey has an erodibility factor (“K”). The SCS soil maps indicate that soils on the project site as:

SCS #102, Aiken loam 30 to 50% slopes - K value of 0.24

“K” is constant in the pre-project and post-project models.

SLOPE LENGTH and STEEPNESS

A topo survey was performed in 2021 by CMP Civil Engineering & Land Surveying Inc. This contour mapping was used to determine slope steepness on the project site. The Slope lengths were selected to analyze the soil loss from the longest and steepest slopes in the blocks for the project area, as shown on the map included in the Appendix. The slope lengths and gradients for the blocks from the pre-project to the post-project models do not change and are identified on the map and in the USLE worksheets included in the Appendix.

VEGETATIVE COVER

Cover factors ("C") for pre-project and post-project conditions were determined using the guidelines provided in the SCS pamphlet entitled "The Universal Soil Loss Equation: Special Applications for Napa County, California (guide).

Pre Project

The existing site conditions for Blocks A consists of approximately 25% brush. The ground cover for this block is approximately 70% grass-like herbaceous plants (grassy) and 30% broadleaf herbaceous plants (woody), and covers approximately 65% of the area.

The existing site conditions for Blocks B consists of approximately 25% brush. The ground cover for this block is approximately 70% grass-like herbaceous plants (grassy) and 30% broadleaf herbaceous plants (woody), and covers approximately 60% of the area.

The existing site conditions for Blocks C consists of approximately 50% brush. The ground cover for this block is approximately 70% grass-like herbaceous plants (grassy) and 30% broadleaf herbaceous plants (woody), and covers approximately 50% of the area.

Post Project

The project proposes a "permanent non-till cover crop with strip spray cultivation scheme with no ripping or tillage" (refer to ECP narrative). Using the table in the guide, "USLE 'C' Factors for Vineyards", the post-project C factor for a no till with strip spray assuming 75% ground cover (0.035).

PRACTICE FACTOR

The accepted practice factor for the existing conditions is 1.0. Using the table in the guide, "P ("Practice") Factors for USLE in Napa Valley Vineyards, the practice factor for vineyard rows running up and downhill is 1.0, this practice factor was used for all Blocks.

RESULTS, CONCLUSION

The pre-project and post-project modeling is presented with Appendix. A comparison of pre-project and post-project modeling shown:

<u>Blocks</u>	<u>Soil Loss (tons/ac.)</u>	
	Pre Project	Post Project
A	1.64	1.30
B	2.36	1.59
C	1.22	0.66

The analysis shows, in each case, that the estimated post-project soil loss is less than or equal to the pre-project condition, and that the proposed vineyard project will not result in increased soil loss.

		Napa Valley Vineyard Engineering								Page 1 of 2	
		PRE USLE Worksheet									
FOR:	Atlas Rock Vineyards										
DATE:	12/16/2021										
		Ranch: 3380 Atlas Peak Road									
		SOIL TYPE: 102									
		T= 3									
# /ACRES:		1.00	Block A	1.00	Block B	Block C					
FACTOR:	DESCRIPTION	Value	/Describe	Value	/Describe	Value	/Describe	Value	/Describe	Value	/Describe
R	Rainfall	100		100		100					
K	Soil Erosiveness	0.24		0.24		0.24					
	Slope length (ft)	245		150		45					
S	Gradient	8.0		11.0		9.0					
LS	Calculated LS	1.55		1.89		0.79		0.00		0.00	
C	Cover	0.044	(1)	0.052	(2)	0.065	(3)				
P	Practice	1		1		1					
A	Soil loss, tons/acre	1.64		2.36		1.22		0.00		0.00	
	Soil loss, tons	1.64		2.36		1.22		0.00		0.00	
		(1) 25% Brush with 65% Ground Cover						(2) 25% Brush with 60% Ground Cover			
		70% Grass (0.70)(.032)= 0.0224						70% Grass (0.70)(.038)= 0.0266			
A=(R) (K) (LS) (C) (P)		30% Broadleaf Cover (0.30)(.073)= 0.0219						30% Broadleaf Cover (0.30)(.083)= 0.0249			
		Weighted Avg C= 0.044						Weighted Avg C= 0.052			
		(3) 50% Brush with 50% Ground Cover									
		70% Grass (0.70)(.053)= 0.0371									
		30% Broadleaf Cover (0.30)(.093)= 0.0279									
		Weighted Avg C= 0.065									

FOR:	Atlas Rock Vineyards
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Ranch:	3380 Atlas Peak Road
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T=	3
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Value	/Describe
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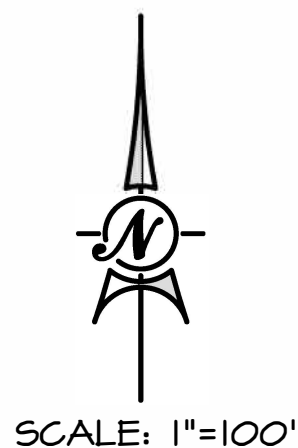
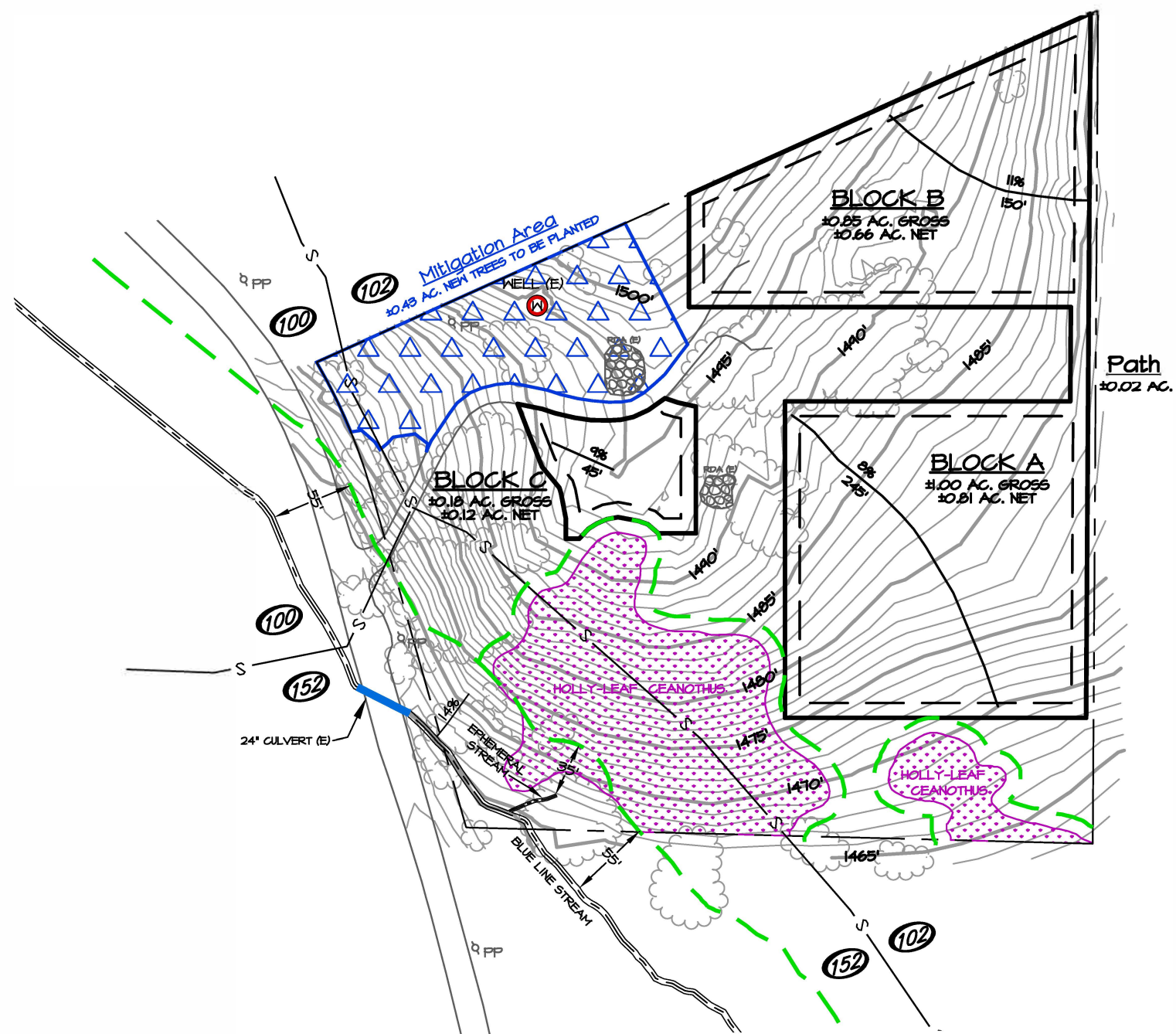
0.00

0.00

0.00

No Till with Strip Spray

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ATLAS ROCK
3380 ATLAS PEAK ROAD
PRE & POST USLE MAP

NVVE 12-16-21