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Landslide Hazard Evaluation
Prichard Hill Properties Vineyard Development
92 and 95 Long Ranch Road
St. Helena, California

Project Number: 7382.01.09.2

The purpose of this letter is to provide geologic information regarding the planned vineyard replant to be performed at 92 and 95 Long Ranch Road in St. Helena, California. We understand that it is planned to develop approximately 24 acres of new vineyard at the property. This letter is being prepared with the intent to comply with Napa County Code Section 18.108.027 (F).

Our geologic publication research included reviewing the following information:

Bezore, S.P., Clahan, K.B., Sowers, J.M., and Witter, R.C., 2005, Geologic Map of the Yountville 7.5' Quadrangle, Napa County, California: A Digital Database, California Geological Survey

Dwyer, M.J., Noguchi, N., and O'Rourke, J., 1976, Reconnaissance Photo-Interpretation Map of Landslides in 24 Selected 7.5-Minute Quadrangles in Lake, Napa, Solano, and Sonoma Counties, California: U.S. Geological Survey OFR 76-74, 25 Plates, Scale 1:24,000.

National Center for Airborne Laser Mapping (NCALM), 2003, LiDAR, Napa Watershed, California, [Opentopo.sdsc.edu](http://opentopo.sdsc.edu).

Natural Resources Conservation Service, United States Department of Agriculture, accessed August 2019. Web Soil Survey, available online at <http://websoilsurvey.nrcs.usda.gov/>.

Based on our geologic review we compiled the image and table below indicating the soil types and depth of materials. This information was collected from the NRCS Web Soil Survey listed above.



Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	> 10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	
154—Henneke gravelly loam, 30 to 75 percent slopes														
Henneke	85	D	0-7	Gravelly loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0-0-0	0-15-30	55-75-95	50-68-85	45-63-80	35-55-75	33-42-51	13-16-18
			7-15	Very gravelly clay loam, very gravelly clay	GC, SC	A-2, A-6, A-7	0-0-0	0-15-30	50-65-80	30-53-75	30-50-70	25-45-65	44-50-66	25-28-40
			15-25	Unweathered bedrock	—	—	0-0-0	—	—	—	—	—	—	
176—Rock outcrop-Hambright complex, 50 to 75 percent slopes														
Rock outcrop	60		0-10	Unweathered bedrock	—	—	—	—	—	—	—	—	—	
Hambright	30	D	0-12	Very stony loam	CL, CL-ML	A-4, A-6	0-0-0	50-63-75	90-95-100	85-93-100	75-85-95	55-73-90	15-23-30	5-10-15
			12-22	Unweathered bedrock	—	—	0-0-0	—	—	—	—	—	—	
178—Sobrante loam, 5 to 30 percent slopes														
Sobrante	85	C	0-6	Loam	ML	A-4	0-0-0	0-0-0	95-98-100	75-83-90	70-78-85	55-63-70	23-32-41	6-11-17
			6-30	Loam, clay loam, silty clay loam	CL	A-6	0-0-0	0-3-5	95-98-100	75-83-90	70-80-90	55-68-80	35-40-46	17-21-25
			30-40	Unweathered bedrock	—	—	0-0-0	—	—	—	—	—	—	
179—Sobrante loam, 30 to 50 percent slopes														
Sobrante	85	C	0-6	Loam	ML	A-4	0-0-0	0-0-0	95-98-100	75-83-90	70-78-85	55-63-70	23-32-41	6-11-17
			6-30	Loam, clay loam, silty clay loam	CL	A-6	0-0-0	0-3-5	95-98-100	75-83-90	70-80-90	55-68-80	35-40-46	17-21-25
			30-40	Unweathered bedrock	—	—	0-0-0	—	—	—	—	—	—	

On March 9, 2020, we performed a geologic reconnaissance of the site and vicinity. We observed the planned vineyard block areas and the existing vineyard blocks and various access roads. We paid particular interest to drainages and steeper sloping areas.

Based on our geologic review and reconnaissance, we judge that it is geologically feasible to grade and replant the subject vineyard slopes as planned. We did not identify any large-scale slope instabilities within the vineyard blocks during our publication review and did not observe any slope failures or landslides at the project site during our reconnaissance.

We judge the risk of global slope instability, both currently and after vineyard development, to be low. As such, erosion of the site surface soils should be considered the primary slope condition of concern. If erosion control measures are installed and maintained in accordance with County of Napa Regulations, we judge the risk of erosional failure at the site to be low.

We trust this provides the information you require at this time. Please contact the undersigned if you have questions.

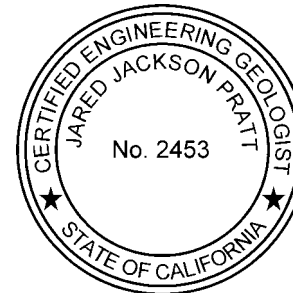
Very truly yours,
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