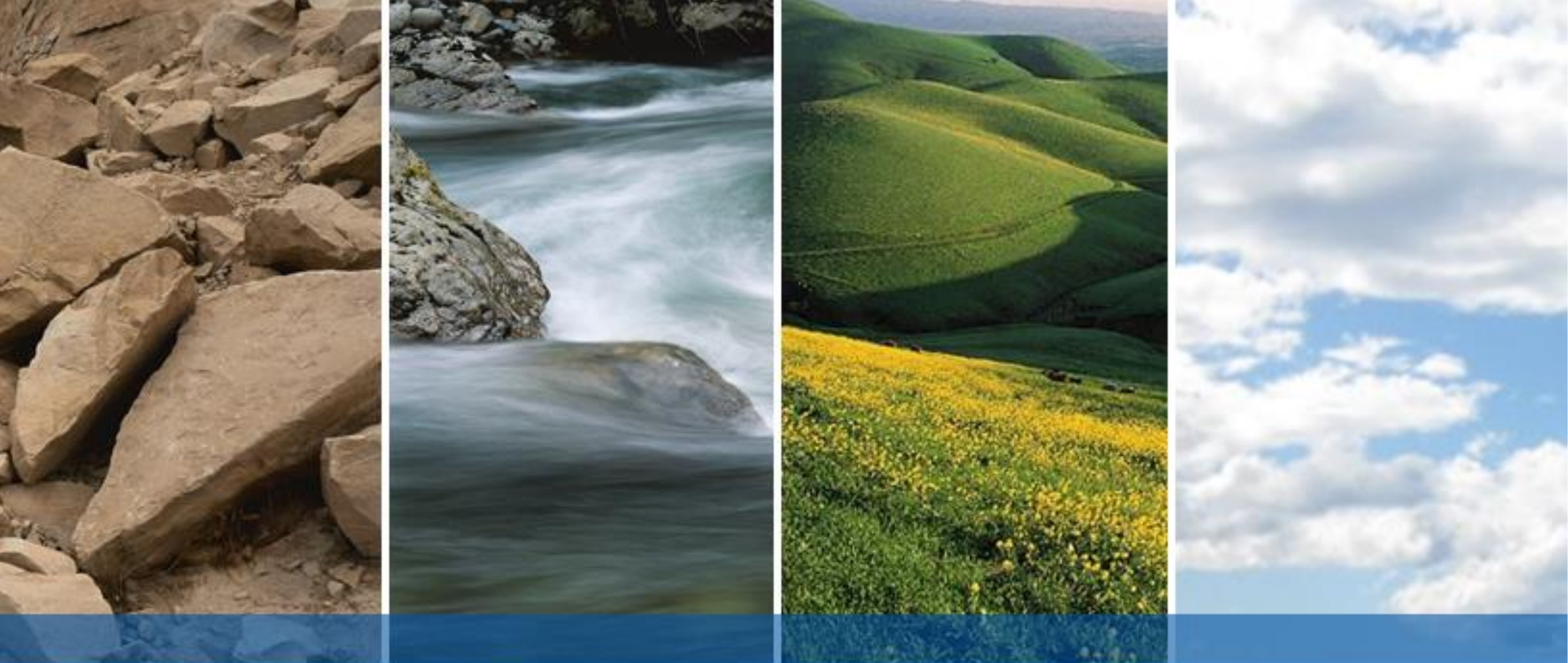

CAMEL HILL VINEYARDS
LOS GATOS, CALIFORNIA

GEOTECHNICAL EXPLORATION FOR LANDSLIDE REPAIRS

SUBMITTED TO
Mr. Jon Anderson
c/o Mr. BJ Anderson
Camel Hill Vineyards
18915 Bear Creek Road
Los Gatos, CA 95033

PREPARED BY
ENGEO Incorporated

March 15, 2024

PROJECT NO.
13831.002.000

ENGEO
Expect Excellence

Project No.
13831.002.000

March 15, 2024

Mr. Jon Anderson
c/o Mr. BJ Anderson
Camel Hill Vineyards
18915 Bear Creek Road
Los Gatos, CA 95033

Subject: Camel Hill Vineyards
Los Gatos, California

GEOTECHNICAL EXPLORATION FOR LANDSLIDE REPAIRS

Dear Messrs. Anderson:

As requested, we completed this geotechnical exploration for two landslide repairs on the property of Camel Hill Vineyards located in Los Gatos, California. The accompanying report presents our field exploration and laboratory testing with our findings, conclusions, and recommendations regarding repairing the landslides.

It is our opinion from a geologic and geotechnical standpoint that repairing the landslides with conventional grading methods is feasible provided the recommendations and guidelines provided in this report are implemented during project planning, design, and construction.

We are pleased to have been of service to you on this project and are prepared to consult further with you and your design team as the project progresses.

Sincerely,

ENGEO Incorporated

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this report, as described in our proposal dated March 10, 2023, and addendum dated April 12, 2023, is to provide geotechnical explorations and engineering design services in support of landslide repairs. We performed the following services.

- Review of available historic aerial photographs, topographic maps, and geologic maps for the study area
- Subsurface exploration consisting of seven test pits and three soil/rock borings
- Laboratory testing of materials sampled during the field exploration
- Geotechnical data analyses
- Report preparation summarizing our conclusions and recommendations for the landslide repair

For our use, we received the following.

- Conceptual Site Plan prepared by ACS Consulting Engineers, Inc., dated November 2, 2022.
- Topographic Map prepared by Pacific Interwest, dated April 20, 2023.

This report was prepared for the exclusive use of our client and their consultants for design of this project. Prior to repairing the landslides, we should review any changes made in the character, design or layout of the proposed repair method to modify the conclusions and recommendations contained in this report, as necessary. This document may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without our express written consent.

1.2 SITE LOCATION

The site is located at the Camel Hill Vineyards property at 18915 Bear Creek Road in Los Gatos, California (Figure 1). Two slopes at the site were damaged during recent heavy rains in the winter months of 2022/2023. The damage includes two slides; one slide is located on the northeastern slope of the northern vineyard (herein referred to as the Upper Landslide) that was previously repaired following a slope failure that occurred during the heavy rains in 2016/2017. The second slide is located on the northern side of the Jeep Trail, which connects the upper and lower vineyards (herein referred to as the Lower Landslide).

Exhibits 1.2-1 and 1.2-2 show photographs of existing conditions of the Upper Landslide and Lower Landslide, respectively.

EXHIBIT 1.2-1: Upper Landslide

EXHIBIT 1.2-2: Lower Landslide

1.2.1 Upper Landslide

Based on field observations and post-storm aerial surveys, we estimate that the Upper Landslide was approximately 70 feet in width at the head of the landslide, approximately 90 feet in width at the toe, and approximately 115 to 120 feet in length. An approximately 10 to 12 feet high scarp is present at the head of the landslide. Topographic relief across the entire Upper Slide is approximately 50 to 55 feet. The slope has a gradient of approximately 2:1 (horizontal:vertical).

1.2.2 Lower Landslide

Based on field observations and post-storm aerial surveys, we estimate that the Lower Landslide was approximately 35 to 40 feet in width and approximately 60 to 65 feet in length. An approximately 3 to 4 feet high scarp is present at the head of the landslide. Topographic relief across the entire Upper Landslide is approximately 20 feet. The slope has a gradient of approximately 3:1 (horizontal:vertical).

1.3 PROJECT DESCRIPTION

We understand from you that the proposed repair will consist of remedial grading to reestablish both the Upper Landslide and the Lower Landslide to their original slope gradients.

2.0 FINDINGS

2.1 GEOLOGY AND SEISMICITY

2.1.1 Regional Geology

The Santa Cruz Mountains lie within the region of coastal California referred to by geologists as the Coast Ranges geomorphic province. The Coast Ranges have experienced a complex geological history characterized by Late Tertiary folding and faulting that has resulted in a series of northwest-trending mountain ranges and intervening valleys.

The site is located east of the San Andreas Fault, the predominant active strike-slip fault within the Coast Ranges geomorphic province. The bedrock of the Santa Cruz Mountains east of the San Andreas Fault generally comprises Jurassic and Cretaceous sedimentary rocks in the Franciscan formation.

According to mapping by Dibblee (2007, Figure 3), the site is comprised of Franciscan sedimentary rock that consists primarily of graywacke sandstone. The graywacke encountered during our exploration generally comprised gray to brownish gray, hard, coherent but fractured, fine-grained, massive to bedded sandstone with thin layers of gray siltstone and mélange where locally sheared with dark gray mudstone.

2.1.2 Faulting and Site Seismicity

The site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone (1974) and no known active faults cross the site. The nearest mapped active fault to the site is the San Andreas mapped approximately 1 mile to the west. The Bay Area contains numerous active earthquake faults. An active fault is defined by the California Geological Survey (CGS) as one that has had surface displacement within Holocene time (about the last 11,700 years) (CGS, 2018).

Numerous small earthquakes occur every year in the San Francisco Bay Region, and larger earthquakes have been recorded and can be expected to occur in the future. Figure 4 shows the approximate locations of these faults and significant historic earthquakes recorded within the San Francisco Bay Region. The 2014 Working Group on California Earthquake Probabilities (WGCEP) evaluated the regional seismicity of the Bay Area and published their results as The Uniform California Earthquake Rupture Forecast, Version 3 (UCERF 3). The Working Group periodically attempts to summarize seismic risk in California with time-dependent earthquake rupture forecasts, in which the probabilities of future events are conditioned upon the dates of previous earthquakes. The WGCEP estimated that there is a 22 percent probability that a moment magnitude (M_w) of 6.7 or greater earthquake will occur on the San Andreas Fault before 2043. The Uniform California Earthquake Rupture Forecast (UCERF3) (Field et al., 2015) estimates the aggregate 30-year probability for a magnitude 6.7 or greater earthquake in the San Francisco region at approximately 72 percent, considering the known active seismic sources in the region. The probability of a 6.7 M_W or greater earthquake on the Hayward and San Andreas faults are 14 and 6 percent, respectively, over the next 30 years.

To evaluate nearby active faults that are capable of generating strong seismic ground shaking at the site, we utilized the USGS Unified Hazard Tool and disaggregated the hazard at the peak ground acceleration (PGA) for a 2,475-year return period, with the resulting faults listed below in Table 2.1.2-1.

TABLE 2.1.2-1: Active Faults Capable of Producing Significant Ground Shaking at the Site (Latitude: 37.1891 Longitude: -122.0027)

FAULT NAME[a]	R_{RUP} TO SITE[b] (miles)	MOMENT MAGNITUDE[c] (M_W)
San Andreas (Peninsula) [0]	1.0	7.8
San Andreas (Santa Cruz Mountains) [0]	1.6	7.2
Monte Vista-Shannon [5]	6.4	6.8
Butano [1]	3.3	7.5

Notes: a. Fault System (Fault Section) [Fault Subsection assigned by UCERF3]
b. R_{RUP} = nearest fault-to-site rupture distance
c. Fault-to-site distances and maximum moment magnitude based on USGS Unified Hazard Tool - Edition: Dynamic Conterminous U.S. 2014 (update) (v4.2.0)

According to the CGS Seismic Hazard Zones map for the Castle Rock Ridge Quadrangle, the site is mapped in an Earthquake-Induced Landslide hazard zone (CGS, 2005).

2.2 FIELD EXPLORATION

Our field exploration included excavating seven test pits and drilling three borings. We present the approximate locations of the explorations in Figure 2. The location and elevations of our explorations are approximate and were estimated by pacing from existing features. As a result, the mapped locations should be considered only as accurate as the methods used to determine them.

2.2.1 Test Pits

On April 12 and 14, 2023, we observed excavation of seven test pits at both the Upper Landslide and Lower Landslide at the locations shown on the Site Plan (Figure 2). An ENGEO representative observed the test pit excavation and logged the subsurface conditions at each location. You provided a Takeuchi TB-219 mini-excavator and excavator operator to excavate the test pits using an 18-inch-wide bucket and logged the type, location, and uniformity of the underlying soil/rock. The maximum depth penetrated by the test pits was 10 feet.

We obtained bulk and disturbed soil samples from the test pits using hand-sampling techniques. Consult the Site Plan and exploration logs for specific subsurface conditions at each location. We include our test pit logs in Appendix A. The logs contain the soil and rock type, color, consistency, and visual classification in general accordance with the Unified Soil Classification System. The logs graphically depict the subsurface conditions encountered at the time of the exploration.

2.2.2 Borings

On April 14, 2023, we observed drilling of three borings at the Upper Landslide as shown on the Site Plan (Figure 2). An ENGEO representative observed the drilling and logged the subsurface conditions at each location. We retained a track-mounted Mobile B53 drill rig and crew to advance the borings using 4½-inch-diameter hollow-stem auger methods.

We obtained bulk soil samples from drill cuttings and retrieved disturbed 3-inch outside diameter (O.D.) dry cores and switched to a 2-inch O.D. Standard Penetration Test (SPT) split-spoon sampler after the last coring. The SPT blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall using an automatic trip system. The 2-inch outside diameter (O.D.) split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows to drive the last 1 foot of penetration; the blow counts have not been converted using any correction factors. When sampler driving was difficult, penetration was recorded only as inches penetrated for 50 hammer blows.

Consult the Site Plan and exploration logs for specific subsurface conditions at each location. We include our boring logs in Appendix B. The logs contain the soil and rock type, color, consistency, and visual classification in general accordance with the Unified Soil Classification System. The logs graphically depict the subsurface conditions encountered at the time of the exploration.

2.3 SUBSURFACE CONDITIONS

We provide a summary of subsurface conditions for the Upper Landslide and Lower Landslide in the below sections.

2.3.1 Upper Landslide

Boring 1-B3 was drilled upslope along the existing maintenance trail while Borings 1-B1 and 1-B2 and Test Pits 1-TP1 through 1-TP3 are located on the landslide debris.

In Boring 1-B3 located along the existing maintenance trail, we encountered 20 feet of fill underlain by clayey sandstone. The fill generally consists of poorly graded sand with clay and gravel, clayey sand, and sandy fat clay with gravel. This material is likely the fill material placed as a result of previous landslide repair activities.

For explorations performed on the landslide debris, we encountered landslide debris to approximately 13 to 14 feet below ground surface (bgs). The landslide debris generally consists of poorly graded sand, clayey sand with varying amounts of gravel, and lean clay and fat clay with varying amounts of sand. The encountered landslide debris is the result of the recent landslide. We encountered a gravel layer underlying the landslide debris at a depth of 11 feet bgs in Borings 1-B1 and 1-B2 and underlying the fill material at 18½ feet bgs in Boring 1-B3. The gravel is likely the drainage gallery for previously placed fill. We encountered weak, weathered, and fractured sandstone and graywacke bedrock underlying the gravel layer.

We encountered a dark gray shear plane, interpreted as a landslide plane, at a depth of approximately 16 feet in Boring 1-B1. In Boring 1-B2, we encountered a possible landslide plane at a depth of approximately 24 feet.

2.3.2 Lower Landslide

Test Pits 1-TP4 through 1-TP6 were excavated upslope of the landslide along the Jeep Trail while Test Pit 1-TP7 was excavated within the landslide debris.

In Test Pits 1-TP4 through 1-TP6 performed along the Jeep Trail, we encountered fill 5½ to 7½ feet bgs underlain by siltstone. The fill generally consists of poorly graded sand with clay and gravel, clayey sand with gravel, and sandy lean clay with gravel. The fill material is likely the material placed during construction of the Jeep Trail. The siltstone is dark bluish gray, weak, weathered, and highly fractured. Schist fragments are also embedded in the siltstone clasts.

In Test Pit 1-TP7 performed on the landslide debris, we encountered landslide debris to the maximum depth of the test pit to 10 feet. The landslide debris consists of fat clay with sand and gravel and clayey sand with gravel.

2.4 GROUNDWATER CONDITIONS

Groundwater was not encountered during our drilling or test pit operations. Fluctuations in the level of groundwater may occur due to variations in rainfall, irrigation practice, and other factors not evident at the time measurements were made.

2.5 LABORATORY TESTING

We performed laboratory tests on selected soil samples to evaluate their engineering properties. For this project, we performed particle size, plasticity index, and compaction curve testing on select samples recovered from the test pits and borings.

We sent one rock core sample to Cooper Testing Laboratory for unconfined compression strength. The laboratory data are included in Appendixes C and D.

2.6 SLOPE STABILITY ANALYSES

We performed slope stability analyses through the landslide area of the Upper Landslide considering the proposed removal and replacement of the landslide as described in subsequent sections below. We did not perform slope stability analyses for the Lower Landslide as it is a relatively shallow and surficial landslide.

The existing topography is based on a topographic map provided by Pacific States Aerial. Remedial grading measures include landslide removal, toe keyway, and geogrid-reinforced fill. Printouts of the results are included in Appendix E.

2.6.1 Method of Analysis

We used the software program SLIDE© (Version 9) along with the Morgenstern and Price and Spencer's methodology. The program analyzes circular slip surfaces within a defined start and end section as well as a specified search window. The start and end sections are generally identified at locations well outside the top and toe of the slope of interest.

We present the soil parameters used in the analyses in Appendix E based on conservative interpretation of the results of our laboratory tests and back-calculation analysis as well as our experience with similar soil.

2.6.2 Acceptable Factors of Safety

Based on local geotechnical practice, in our opinion, we recommend that a minimum static factor of safety of 1.5 and a minimum pseudostatic factor of safety of 1.0 be considered adequate for slope stability for the landslide repairs.

2.6.3 Results of Analyses

The results indicate that the proposed remedial grading measures to remove and replace the landslide with geogrid-reinforced fill at the toe of the rebuilt slope will result in an adequate static factor of safety of 1.6 against slope failure.

In evaluating the stability of slopes under seismic conditions, we used a pseudostatic method of analysis. The pseudostatic method models the effects of transient or pulsating earthquake loading on a potential landslide mass by using an equivalent sustained horizontal force that is the product of a seismic coefficient and the weight of the potential landslide mass. To determine the pseudostatic seismic coefficient (kh), we followed the method outlined in CGS Special Publication 117A (SP117A, 2008). We calculated a seismic coefficient (kh) of 0.39g using a PGA of 1.24g. The selected seismic coefficient is based on a displacement threshold of about 6 inches (or 15 centimeters).
The resulting pseudostatic factor safety is less than 1.0 therefore we performed a Newmark-type displacement analysis based on the methodology proposed by Bray and Macedo (2019). The seismic displacement model is developed based primarily on the influence on the system's yield coefficient (k_y) among other inputs. The resulting yield coefficient when considering proposed remedial measures is 0.21g. Based on this, the Bray and Macedo (2019) model estimates displacement of approximately 12 to 18 inches of potential slope movement in a design-level earthquake. We anticipate this amount of displacement will be acceptable for the proposed slope repair. Results of our analysis have been attached in Appendix E.

3.0 CONCLUSIONS

From a geologic and geotechnical standpoint, it is our opinion that remedial grading techniques, such as removing and replacing the landslide debris as engineered fill with subdrains, are a feasible approach for the proposed repair of the Upper Landslide and Lower Landslide.

For the Upper Landslide, a grading solution to repair the landslide will include excavation of a keyway through the landslide debris, installation of subdrains, and placement of geogrid-reinforced engineered fill, keyed and benched into in-place bedrock to provide proper stability of the compacted fill.

For the Lower Landslide, a grading solution to repair the landslide will include excavation of a keyway, installation of subdrains and placement of engineered fill, keyed and benched into in-place native soil or bedrock to provide proper stability.

4.0 EARTHWORK RECOMMENDATIONS

4.1 GRADING

As used in this report, relative compaction refers to the in-place dry unit weight of soil expressed as a percentage of the maximum dry unit weight of the same soil, as determined by the ASTM D1557 laboratory compaction test procedure, latest edition. Compacted soil is not acceptable if it is unstable; it should exhibit only minimal flexing or pumping, as observed by an ENGEO representative. The term "moisture condition" refers to adjusting the moisture content of the soil by either drying if too wet or adding water if too dry.

Notify us at least 3 days prior to grading to coordinate the schedule with the grading contractor. We should observe grading operations and provide compaction testing.

4.2 SELECTION OF MATERIALS

Except for the organically contaminated near-surface material, the site soil and bedrock containing less than 2 percent organics are suitable for use as engineered fill. Imported fill material should meet the above requirements and have a plasticity index like, or less than, on-site soil material. Allow us the opportunity to sample and test proposed imported fill materials at least 5 days prior to delivery to the site. We recommend no rock fragments larger than 6 inches in diameter within an engineered fill.

4.3 TOE KEYWAY

We recommend a keyway be excavated through the Upper Landslide and Lower Landslide at the toe of proposed engineered fill slope to be constructed for the landslide repairs. As shown in the attached detail (Figure 6), we anticipate keyway construction for Upper Landslide will consist of a minimum 18-foot-wide keyway extending through the landslide debris to an estimated depth of 25 feet, and for Lower Landslide the keyway construction will consist of a minimum 10-foot-wide keyway extending through the landslide debris to an estimated depth of 15 feet. The depth of the keyway will be determined in the field by an engineering geologist to confirm embedment into competent, in-place bedrock. A subsurface drainage system should be installed at the base of the keyway as recommended in a subsequent section.

The keyway for the Upper Landslide should be backfilled with geogrid-reinforced engineered fill. Geogrid should be placed in accordance with the recommendation provided in the following section.

4.4 GEOGRID

Geogrid should be placed in horizontal layers, at 3 foot (minimum) vertical intervals starting at the base of the keyway and extending at least 6 feet above the toe of slope (Figure 7). Geogrid reinforcement should consist of Mirafi 10XT, or equivalent. Geogrid-reinforced engineered fill should be placed the entire length and width of the keyway and layers of geogrid should extend from the front cut of the keyway to the back cut of the keyway or a maximum length of 35 feet as shown on Figure 7.

4.5 SUBSURFACE DRAINAGE

We recommend subsurface drainage systems for keyways and at the base of removal areas, as a minimum. Secondary bench subdrains may also be required, depending upon the height of the fill slope/slope rebuild and the slope of the underlying native terrain. In addition, control observed seepage areas or suspected spring areas in development areas using subdrains. We recommend a positive fall of at least 1 percent towards an approved outlet for all subdrains.

Subdrain systems should consist of a minimum 6-inch-diameter perforated pipe encased in Caltrans Class 2 Permeable Material, or crushed rock wrapped in filter fabric. As an alternative, consider prefabricated geocomposite drainage material, such as SKAPS TNS 220-6, in lieu of the granular medium above the subdrain zone.

Subdrain pipe shall conform to these supplemental recommendations unless specified elsewhere by ENGEO. We recommend perforated pipe for various depths in accordance with the following requirements.

TABLE 4.5-1: Perforated Pipe Requirements

PIPE TYPE	STANDARD	TYPICAL SIZE (inches)	PIPE STIFFNESS (psi)
BELOW 50 FEET OF FINISHED GRADE			
PVC Schedule 80	ASTM D1785	6	530
BETWEEN 15 AND 50 FEET OF FINISHED GRADE			
PVC SDR 23.5	ASTM D3034	6	153
PVC Schedule 40	ASTM D1785	6	135
BETWEEN 0 TO 15 FEET OF FINISHED GRADE			
PVC SDR 35	ASTM D3034	6	46

Submit other pipes not listed in the table above for review by the geotechnical engineer not less than 5 days before proposed order and delivery.

Discharge from the subdrains will generally be low but in some instances may be continuous. Subdrains should outlet into the storm drain system or other approved outlets. The project civil engineer should survey and document their locations for future maintenance.

Not all sources of seepage are evident during the time of field work because of the intermittent nature of some of these conditions and their dependence on long-term climatic conditions. Furthermore, new sources of seepage may be created by a combination of changed topography, manmade irrigation patterns, and potential utility leakage. Since uncontrolled water movements are one of the major causes of detrimental soil movements, it is of utmost importance to advise the geotechnical engineer of any seepage conditions to initiate remedial actions, if necessary. Refer to Figure 9 for anticipated subdrain systems. An ENGEO representative should determine final subdrain locations and extents during grading.

4.6 LANDSLIDE DEBRIS

We recommend that the landslide debris be completely removed and replaced as engineered fill. The depth of the landslide varies across the proposed repair area, but based on borings at the approximate location of the keyway we estimate that the Upper Landslide extends to a depth of approximately 25 feet bgs at the keyway location, and the Lower Landslide extends to a minimum depth of approximately 15 feet bgs at the keyway location.

The actual depth and location of the keyway and landslide removal as well as the locations of subdrainage may be modified in the field by the Engineering Geologist, based on the actual field conditions and geometry exposed during grading.

4.7 OVER-OPTIMUM SOIL MOISTURE CONDITIONS

The contractor should anticipate excessively over-optimum (wet) soil moisture conditions during winter or spring grading, or during or following periods of rain. Wet soil can make proper compaction difficult or impossible. Mitigate wet soil conditions by:

1. Frequent spreading and mixing during warm dry weather.
2. Mixing with drier materials.
3. Mixing with a lime, lime-flyash, or cement product, or
4. Stabilizing with aggregate or geotextile stabilization fabric, or both.

We should evaluate Options 3 and 4 prior to implementation.

4.8 FILL COMPACTION

Our representative should be present during all phases of grading operations to observe site preparation, grading operations, and subdrain placement. Excavate areas to receive fill to a firm undisturbed surface, scarified to a depth of 12 inches, moisture conditioned, and recompacted to provide adequate bonding with the initial lift of fill. Place all fill in thin compacted lifts that do not exceed 12 inches or the depth of penetration of the compaction equipment used, whichever is less. Track rolling to compact faces of slopes is usually not sufficient; typically, slopes should be overfilled a minimum of 2 feet and cut back to design grades. We recommend the following specifications for compaction of on-site fill.

TABLE 4.8-1: Fill Placement Requirements

MATERIALS	MINIMUM RELATIVE COMPACTION (%)	MINIMUM MOISTURE CONTENT (percentage points above optimum)
Import (low expansive)	95	2
Site Soil (expansive)	90	3

4.9 GRADED SLOPES

4.9.1 Fill Slopes

In general and for preliminary purposes, fill slopes should be no steeper than 2:1 (horizontal:vertical) and up to a maximum height of 50 feet. For slopes steeper than 2½:1, we recommend the slope be constructed with geogrid reinforcement. Geogrid reinforcement should consist of Tensar BX1200 (or equivalent) placed horizontally at 3-foot vertical intervals, extending 13 feet from the face of slope back into the fill (Figure 7).

4.9.2 Cut Slopes

In general and for preliminary purposes, cut slopes should be no steeper than 2:1 (horizontal:vertical) and up to a maximum height of 8 feet. Cut slopes should be evaluated in the field during grading by an Engineering Geologist.

4.10 EROSION CONTROL

Grade the tops of slopes in such a way as to prevent water from flowing freely down the slopes. When heavy rain occurs, newly graded slopes may experience severe erosion due to the nature of the site soil and bedrock. We recommend a positive gradient away from the tops of slopes to carry the surface runoff away from the slopes to areas where the contractor can control erosion. Leave no completed slope standing through a winter season without erosion control measures. Following site grading, we recommend seeding the finished slope to promote vegetative growth and covering it with erosion control fabric and straw wattles.

4.11 MONITORING AND TESTING

Our experience and that of our profession clearly indicate that the risk of costly design, construction, and maintenance problems can be significantly lowered by retaining the design geotechnical engineering firm to perform construction monitoring to check the validity of the assumptions we made to prepare this report. Earthwork operations should be performed under the observation of our representative to check that the site is properly prepared, the selected fill materials are satisfactory, and that placement and compaction of the fill have been performed in accordance with our recommendations and the project specifications. Sufficient notification to us prior to earthwork is important.

If we are not retained to perform the services described above, then we are not responsible for any party's interpretation of our report (and subsequent addenda, letters, and verbal discussions).

5.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report presents geotechnical recommendations for design of the landslide repairs discussed in Section 1.2. If changes occur in the nature or design of the project, we should be allowed to review this report and provide additional recommendations, if any. It is the responsibility of the owner to transmit the information and recommendations of this report to the appropriate organizations or people involved in design of the project, including but not limited to developers, owners, buyers, architects, engineers, and designers. The conclusions and recommendations contained in this report are solely professional opinions and are valid for a period of no more than 2 years from the date of report issuance.

We strived to provide our professional services in accordance with generally accepted principles and practices currently employed in the area; there is no warranty, express or implied. There are risks of earth movement and property damages inherent in building on or with earth materials. We are unable to eliminate all risks; therefore, we are unable to guarantee or warrant the results of our services.

This report is based upon field and other conditions discovered at the time of report preparation. We developed this report with limited subsurface exploration data. We assumed that our subsurface exploration data are representative of the actual subsurface conditions across the site. Considering possible underground variability of soil and groundwater, additional costs may be required to complete the project. We recommend that the owner establish a contingency fund to cover such costs. If unexpected conditions are encountered, ENGEO must be notified immediately to review these conditions and provide additional and/or modified recommendations, as necessary.

Our services did not include excavation sloping or shoring, soil volume change factors, flood potential, or a geohazard exploration. In addition, our geotechnical exploration did not include work to determine the existence of possible hazardous materials. If any hazardous materials are encountered during construction, the proper regulatory officials must be notified immediately.

This document must not be subject to unauthorized reuse, that is, reusing without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time.

Actual field or other conditions will necessitate clarifications, adjustments, modifications, or other changes to ENGEO's documents. Therefore, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications, or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include on-site construction observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims arising from or resulting from the performance of such services by other persons or entities, and from any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

We determined the lines designating the interface between layers on the exploration logs using visual observations. The transition between the materials may be abrupt or gradual. The exploration logs contain information concerning samples recovered, indications of the presence of various materials such as clay, sand, silt, rock, existing fill, etc., and observations of groundwater encountered. The field logs also contain our interpretation of the subsurface conditions between sample locations. Therefore, the logs contain both factual and interpretative information. Our recommendations are based on the contents of the final logs, which represent our interpretation of the field logs.

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FIGURES

BASEMAP SOURCE: GOOGLE EARTH MAPPING SERVICE 2022

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VICINITY MAP

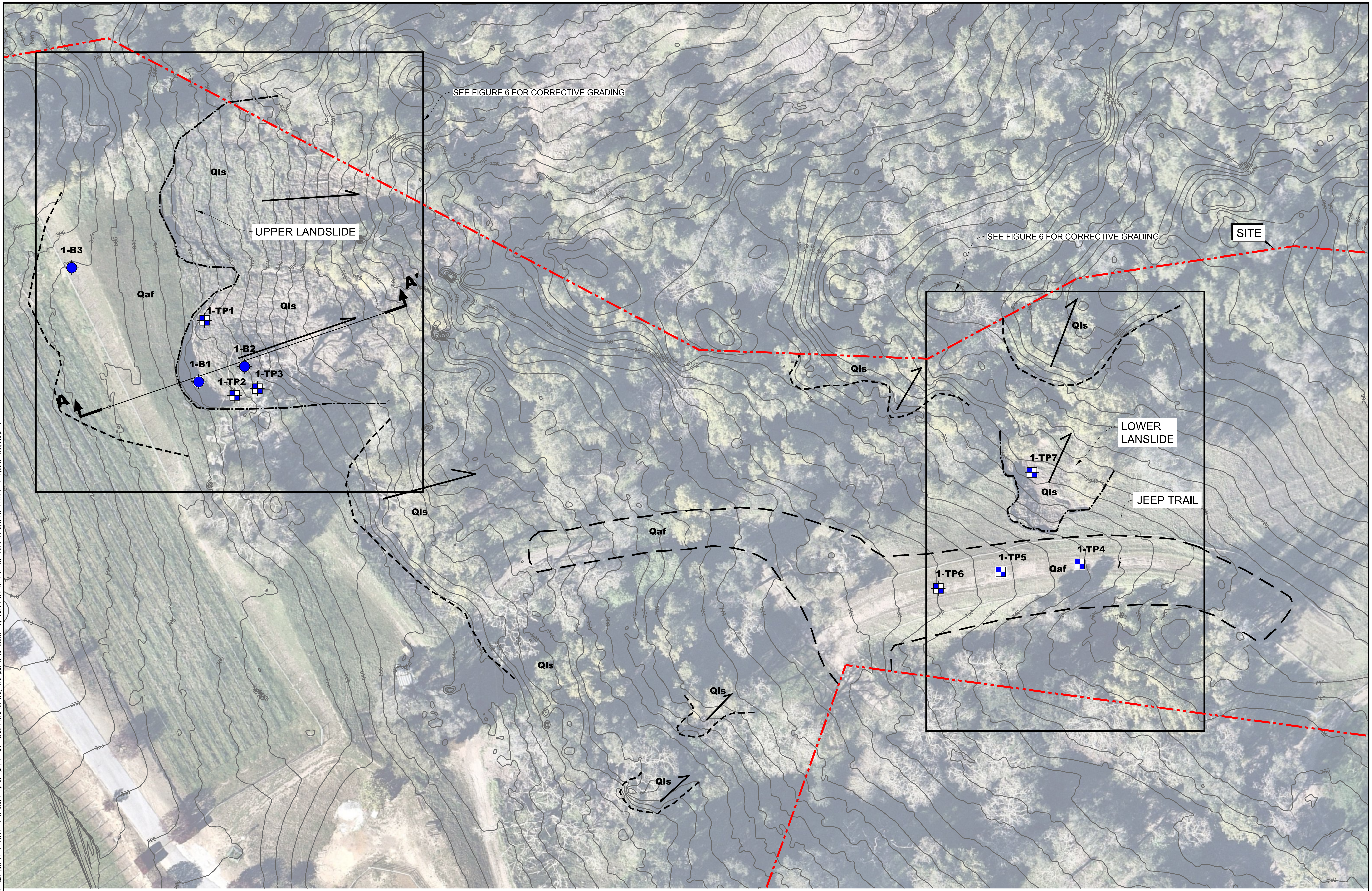
CAMEL HILL VINEYARDS

LOS GATOS, CALIFORNIA

PROJECT NO.: 13831.002.000	FIGURE NO. 1
SCALE: AS SHOWN	
DRAWN BY: QRL	CHECKED BY: NP

PATH: G:\DRAFTING\PROJECTS_12000 TO 13999\13831\13831002000\GEOTECH\GEX\18915 BEAR CREEK RD.APRX
LAYOUT: VICINITY USER: QLIANG

ORIGINAL FIGURE PRINTED IN COLOR



EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

- GEOLOGIC CONTACT LINE
- OLD LANDSLIDE LIMIT
- NEW LANDSLIDE LIMIT
- 1-B1 BORING (ENGEO, 2023)
- 1-TP1 TEST PIT (ENGEO, 2023)
- A A' CROSS SECTION LINE

Qaf	ARTIFICIAL FILL
Qc	COLLUVIUM
Qls	LANDSLIDE
KJfs	FRANCISCAN FORMATION SANDSTONE

N

0 40
FEET

BASE MAP SOURCE: NEAR MAP AERIAL AND PACIFIC INTERWEST SURVEY

ENGEO
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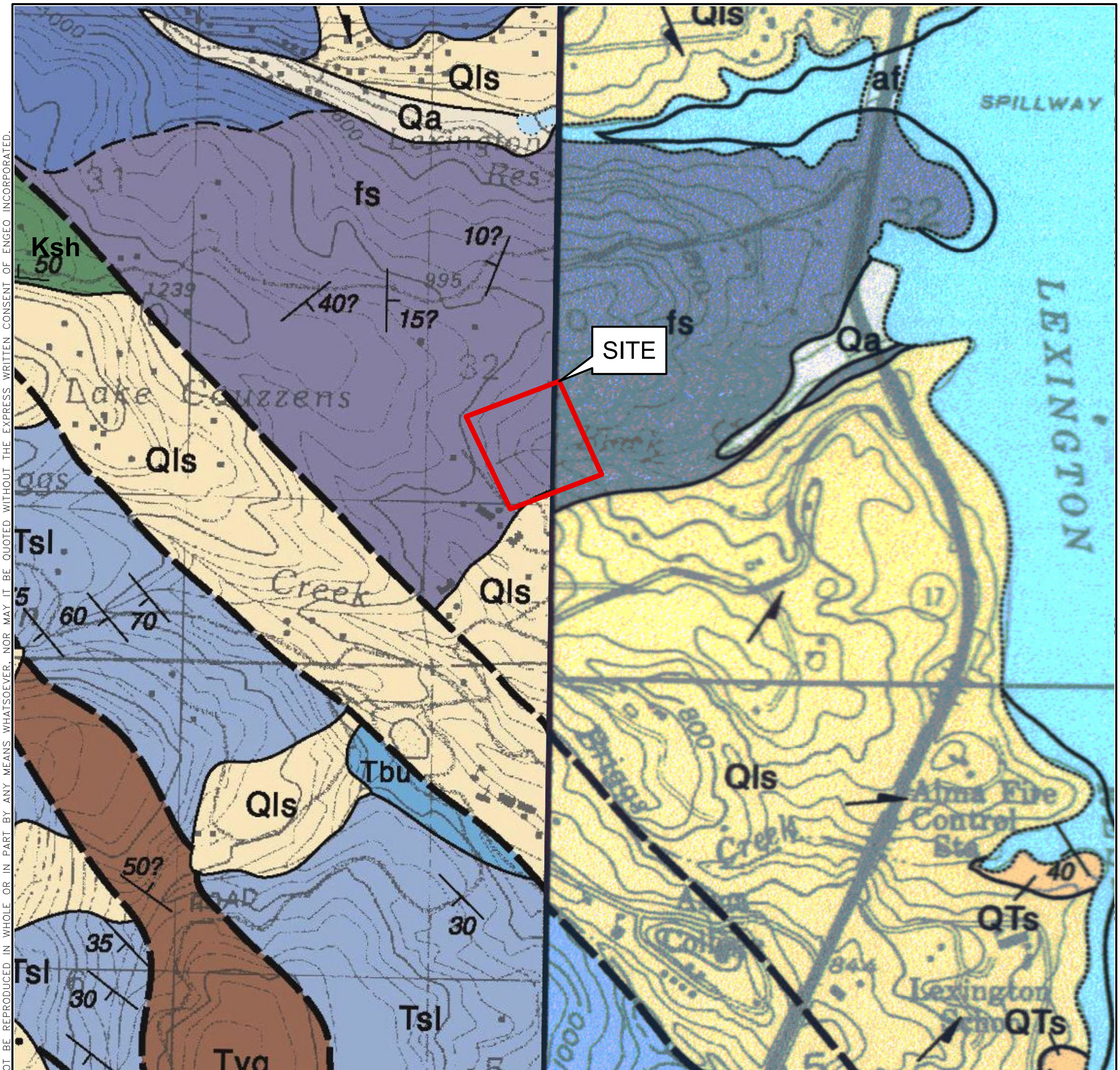
SITE PLAN
CAMEL HILL VINEYARDS
LOS GATOS, CALIFORNIA

PROJECT NO.: 13831.002.000
SCALE: AS SHOWN
DRAWN BY: KW
CHECKED BY: JBR
FIGURE NO. 2

ORIGINAL FIGURE PRINTED IN COLOR

FILE PATH: G:\Drafting\PROJECTS_12000 to 13999\13831\13831002000\CORR-GRADING\13831002000 2- SITE PLAN GEOLOGIC MAP-0623.dwg SAVE DATE: 6/15/2023 2:27:30 PM SAVED BY: llee



N

0 500 1,000
FEET

BASEMAP SOURCE: DIBBLE 2005 &2007

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

Qa	SURFICIAL SEDIMENT ALLUVIAL GRAVEL
Qls	LANDSLIDE RUBBLE
QTs	GRAVEL/CONGLOMERATE OF PEBBLES OF MOSTLY MIXED DETRITUS DERIVED FROM LOCAL ROCKS
Ksh	HARD SANDSTONE AND SHALE
fs	GREYWACKE SANDSTONE
Tvq	VAQUEROS FORMATION SANDSTONE
Tsl	SAN LORENZO FORMATION SILTSTONE AND MICACEOUS SHALE
Tbu	BUTANO FORMATION SANDSTONE AND SHALE

ENGEO
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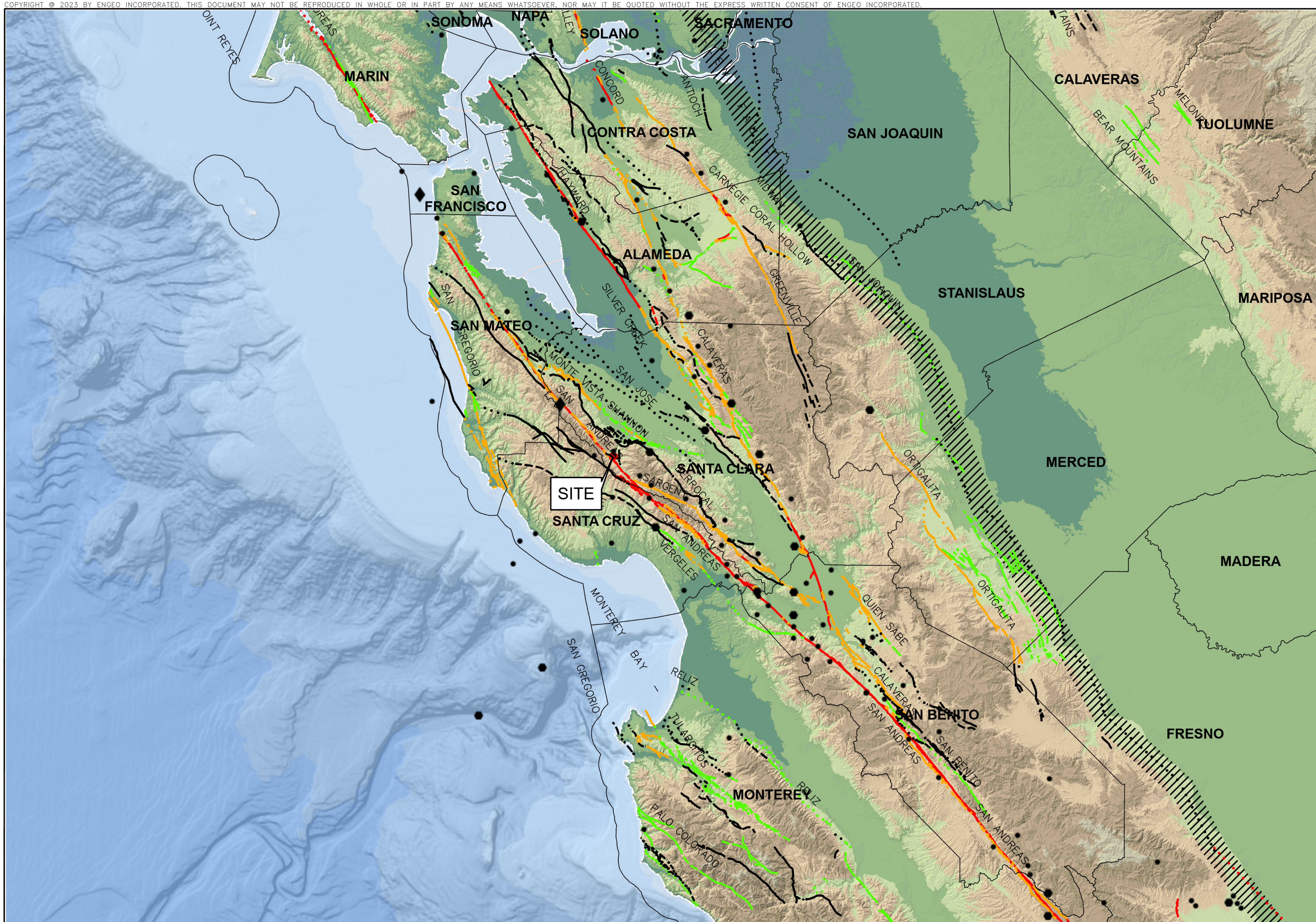
REGIONAL GEOLOGIC MAP
CAMEL HILL VINEYARDS
LOS GATOS, CALIFORNIA

PROJECT NO.: 13831.002.000
SCALE: AS SHOWN
DRAWN BY: QRL
CHECKED BY: NP
FIGURE NO. 3

PATH: G:\DRAFTING\PROJECTS_12000 TO 13999\13831\13831002000\GEOTECH\GEX\18915 BEAR CREEK RD.APRX
LAYOUT: GEOLOGIC USER: QLIANG
ORIGINAL FIGURE PRINTED IN COLOR



N

0 7.5 15

Miles

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

EARTHQUAKE

- MAGNITUDE 7+
- MAGNITUDE 6-7
- MAGNITUDE 5-6

QUATERNARY FAULTS 2020

BASED ON TIME OF MOST RECENT SURFACE DEFORMATION

- HISTORICAL (<150 YEARS), WELL CONSTRAINED LOCATION
- HISTORICAL (<150 YEARS), MODERATELY CONSTRAINED LOCATION
- HISTORICAL (<150 YEARS), INFERRED LOCATION
- LATEST QUATERNARY (<15,000 YEARS), WELL CONSTRAINED LOCATION
- LATEST QUATERNARY (<15,000 YEARS), MODERATELY CONSTRAINED LOCATION
- LATEST QUATERNARY (<15,000 YEARS), INFERRED LOCATION
- LATE QUATERNARY (<130,000 YEARS), WELL CONSTRAINED LOCATION
- LATE QUATERNARY (<130,000 YEARS), MODERATELY CONSTRAINED LOCATION
- LATE QUATERNARY (<130,000 YEARS), INFERRED LOCATION
- UNDIFFERENTIATED QUATERNARY(<1.6 MILLION YEARS), WELL CONSTRAINED LOCATION
- UNDIFFERENTIATED QUATERNARY(<1.6 MILLION YEARS), MODERATELY CONSTRAINED LOCATION
- UNDIFFERENTIATED QUATERNARY(<1.6 MILLION YEARS), INFERRED LOCATION
- GREAT VALLEY FAULT ZONE

BASE MAP SOURCE
ESRI, GEBCO, DELORME, NATURALVUE
COLOR HILLSHADE IMAGE BASED ON THE NATIONAL ELEVATION DATA SET (NED) AT 30 METER RESOLUTION
U.S.G.S. QUATERNARY FAULT DATABASE, 2020
U.S.G.S. HISTORIC EARTHQUAKE DATABASE (1800-PRESENT)
U.S.G.S OPEN-FILE REPORT 96-705

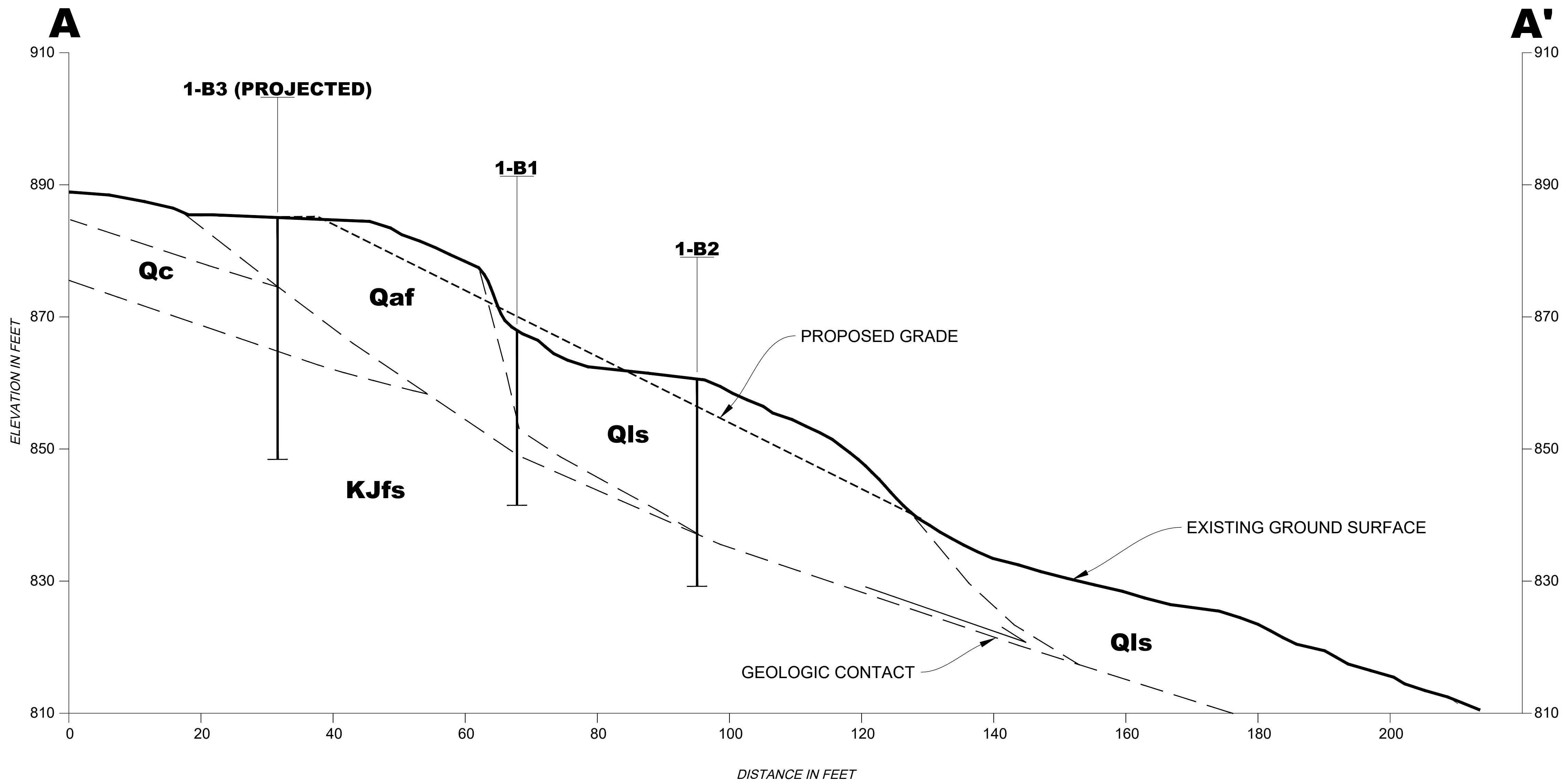
ENGEO
Expect Excellence

REGIONAL FAULTING AND SEISMICITY MAP
CAMEL HILL VINEYARDS
LOS GATOS, CALIFORNIA

PROJECT NO. : 13831.002.000	FIGURE NO. 4
SCALE: AS SHOWN	
DRAWN BY: CC	CHECKED BY: JBR

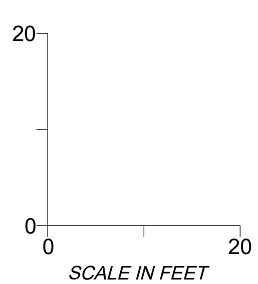
PATH: G:\DRAFTING\PROJECTS_12000 TO 13999\13831\13831002000\CORR-GRADING\13831002000_4_RFM_0623.APRX
LAYOUT: FAULT&SEISMICITY - 2020 USER: CCULBERTSON

ORIGINAL FIGURE PRINTED IN COLOR



SECTION A-A'

1"= 20'



EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

Qaf ARTIFICIAL FILL

Qc COLLUVIUM

Qls LANDSLIDE

KJfs FRANCISCAN FORMATION SANDSTONE

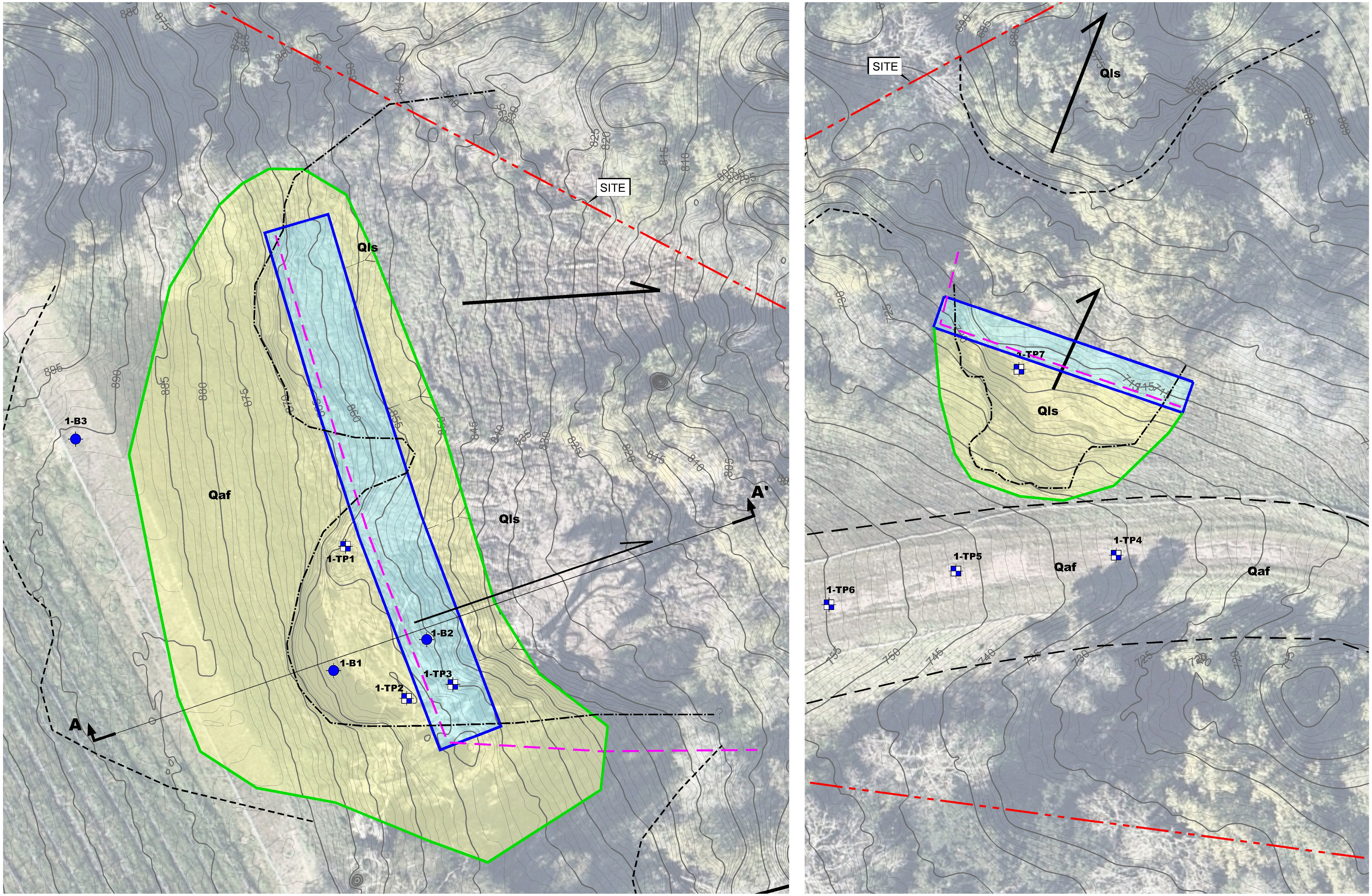
1-B3 BORING (ENGEO, 2023)

DISCLAIMER: CROSS SECTION IS FOR ILLUSTRATION PURPOSES ONLY. THE TRANSITION BETWEEN MATERIALS MAY BE ABRUPT OR GRADUAL. VARIATIONS SHOULD BE EXPECTED.

ENGEO
Expect Excellence

GEOLOGIC CROSS SECTION
CAMEL HILL VINEYARDS
LOS GATOS, CALIFORNIA

PROJECT NO.: 13831.002.000
SCALE: AS SHOWN
DRAWN BY: KW
CHECKED BY: JBR
FIGURE NO. 5



EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

— —	GEOLOGIC CONTACT LINE
------	OLD LANDSLIDE LIMIT
—·—·—	NEW LANDSLIDE LIMIT
1-B1	BORING (ENGEO, 2023)
1-TP1	TEST PIT (ENGEO, 2023)
A A'	CROSS SECTION LINE
(blue box)	PROPOSED KEYWAY
(green outline)	CORRECTIVE GRADING SLOPE REBUILD LIMIT
(magenta dashed)	PROPOSED KEYWAY SUBDRAIN
Qaf	ARTIFICIAL FILL
Qc	COLLUVIUM
Qls	LANDSLIDE
KJfs	FRANCISCAN FORMATION SANDSTONE

N

0 20 FEET

NOTE: SEE FIGURE 2 FOR LOCATIONS OF CORRECTIVE GRADING

BASE MAP SOURCE: NEAR MAP AERIAL AND PACIFIC INTERWEST SURVEY

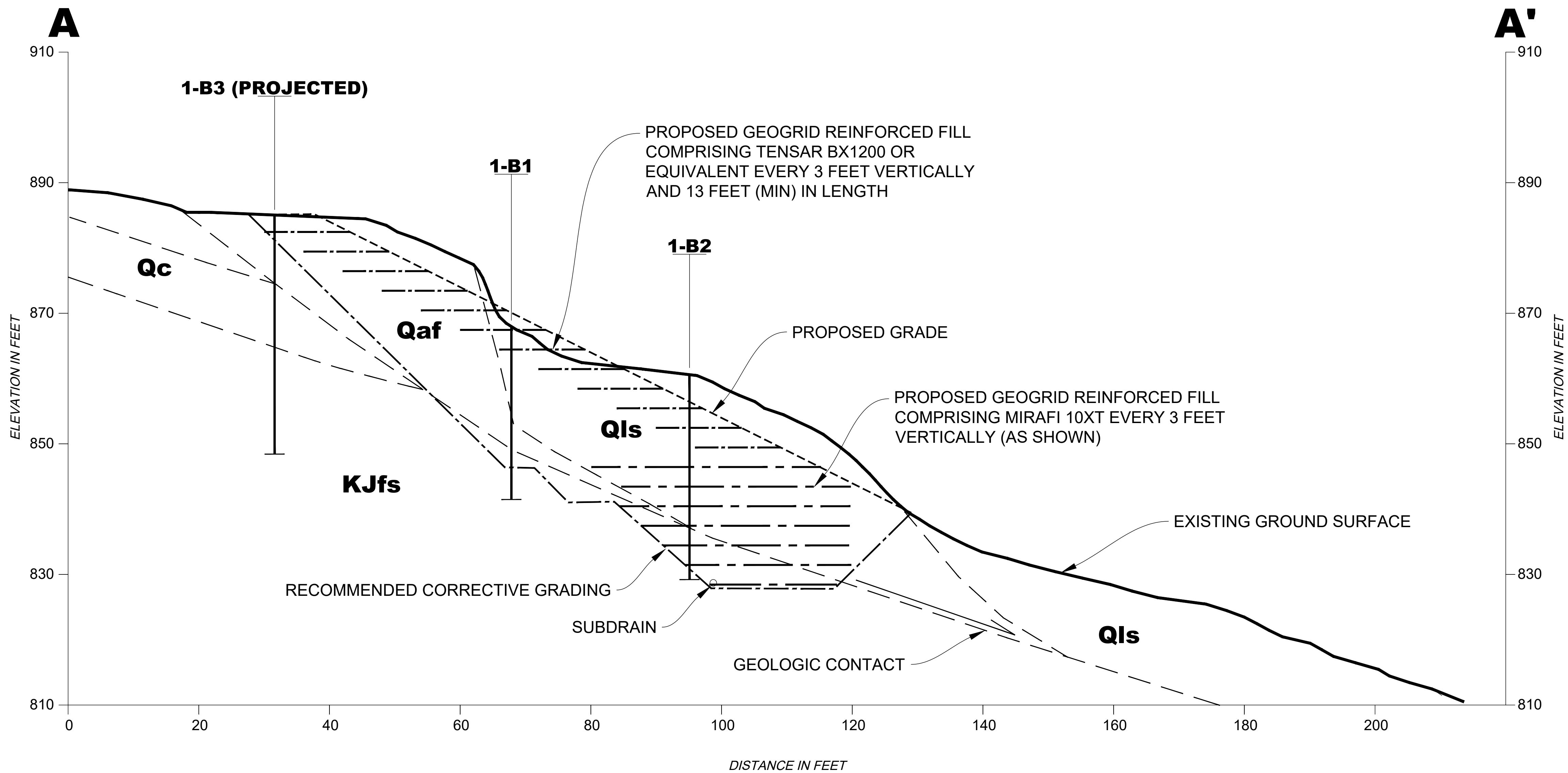
ENGEO Expect Excellence

CORRECTIVE GRADING PLAN
CAMEL HILL VINEYARDS
LOS GATOS, CALIFORNIA

PROJECT NO.: 13831.002.000
SCALE: AS SHOWN
DRAWN BY: KW CHECKED BY: JBR
FIGURE NO. 6

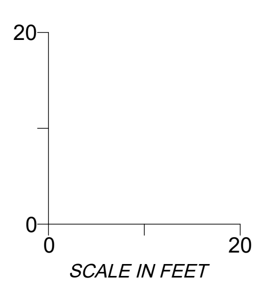
ORIGINAL FIGURE PRINTED IN COLOR

FILE PATH: G:\Drafting\PROJECTS_12000 to 13999\13831\13831002000\CORR-GRADING\13831002000 6 Corrective grading plan-0623.dwg SAVE DATE: 6/15/2023 2:27:43 PM SAVED BY: tlee



SECTION A-A'

1"= 20'



EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

Qaf ARTIFICIAL FILL

Qc COLLUVIUM

Qls LANDSLIDE

KJfs FRANCISCAN FORMATION SANDSTONE

1-B3 BORING (ENGEO, 2023)

DISCLAIMER: CROSS SECTION IS FOR ILLUSTRATION PURPOSES ONLY. THE TRANSITION BETWEEN MATERIALS MAY BE ABRUPT OR GRADUAL. VARIATIONS SHOULD BE EXPECTED.

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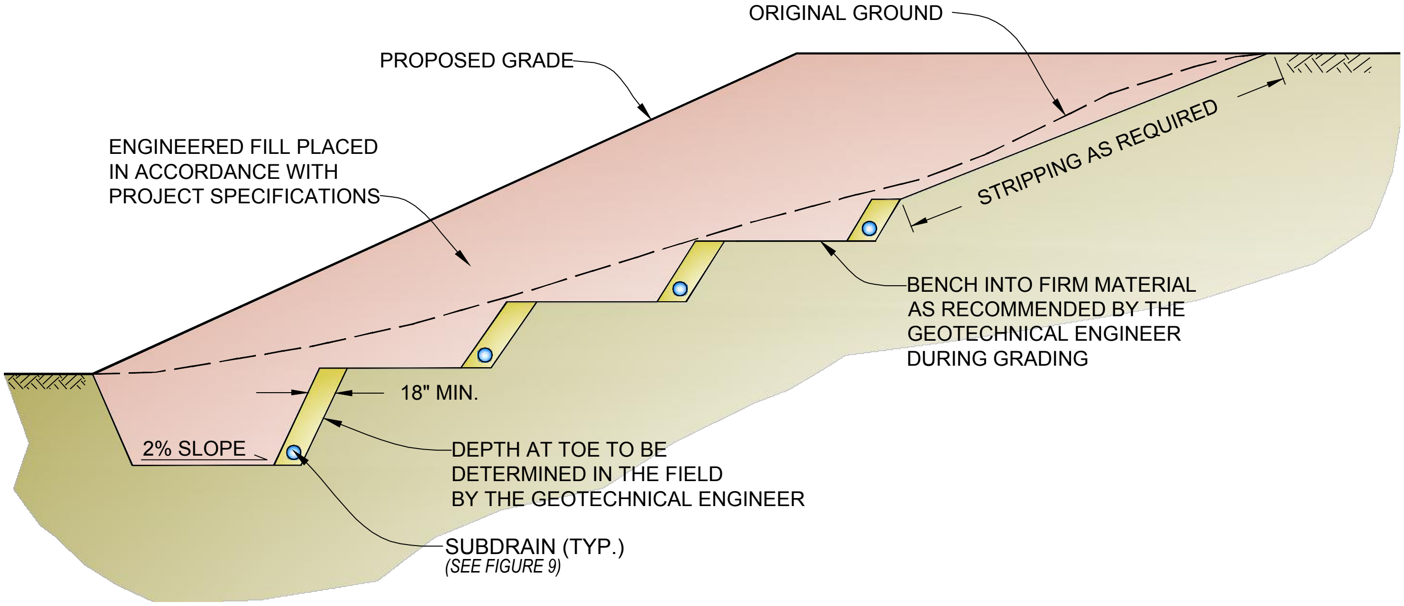
CORRECTIVE GRADING CROSS SECTION CAMEL HILL VINEYARDS LOS GATOS, CALIFORNIA	PROJECT NO.: 13831.002.000		FIGURE NO. 7
	SCALE: AS SHOWN		
	DRAWN BY: KW	CHECKED BY: JBR	

FILE PATH: G:\Drafting\PROJECTS_12000 to 13999\13831\13831002000\CORR-GRADING\13831002000 7 - CORRECTIVE GRADING CROSS SECTION-0623.dwg SAVE DATE: 6/15/2023 9:34:33 AM SAVED BY: CCulbertson

ORIGINAL FIGURE PRINTED IN COLOR



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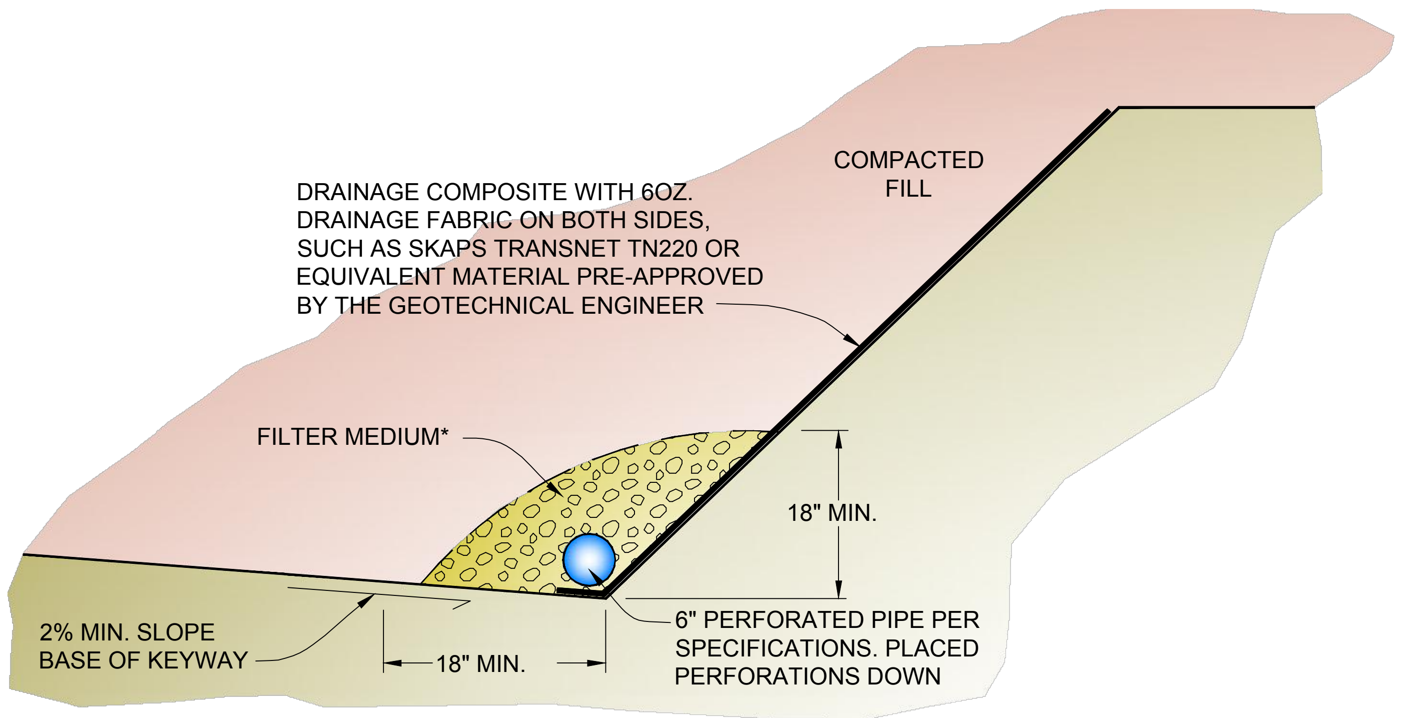
TYPICAL KEYWAY AND FILL SLOPE

CAMEL HILL VINEYARDS

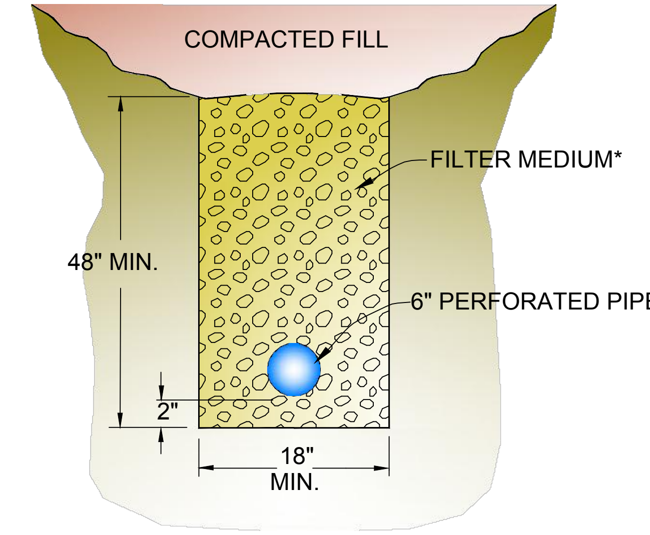
LOS GATOS, CALIFORNIA

PROJECT NO.: 13831.002.000	FIGURE NO. 8
SCALE: NO SCALE	
DRAWN BY: CC	CHECKED BY: JBR

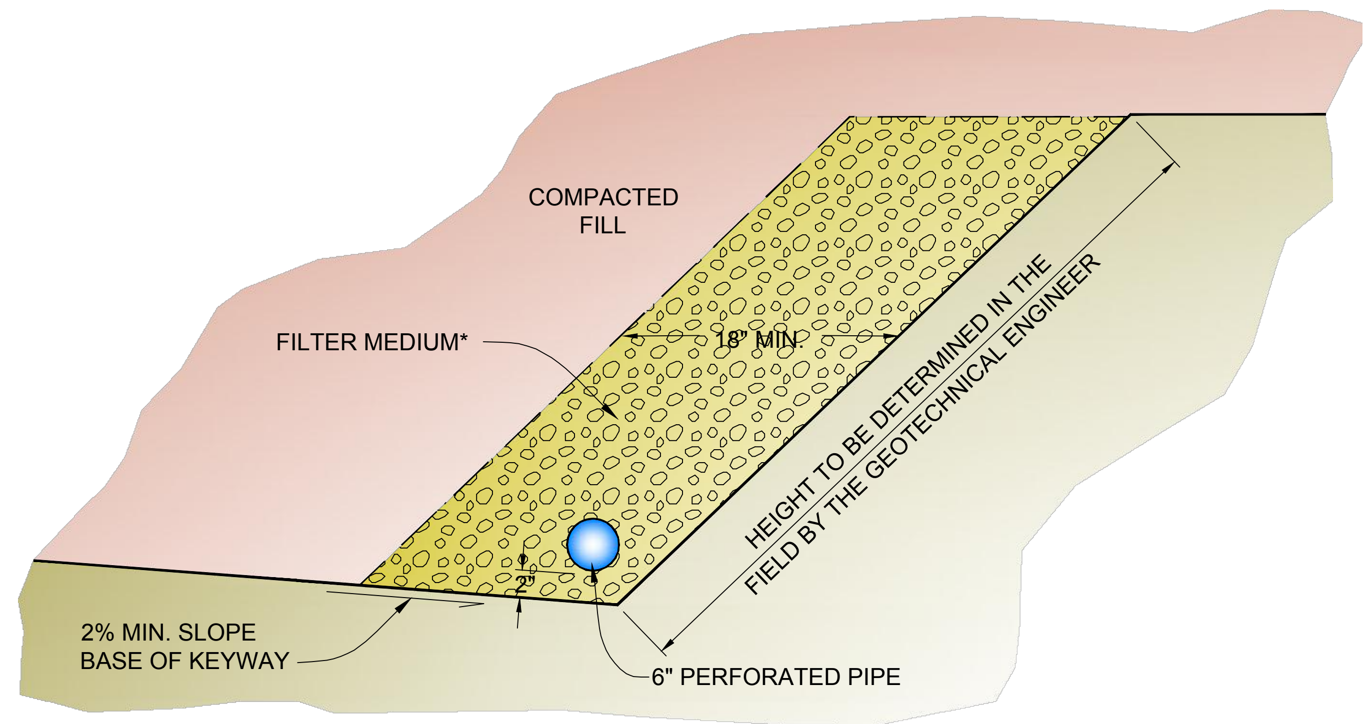
ORIGINAL FIGURE PRINTED IN COLOR



KEYWAY SUBDRAIN - OPTION 1



SWALE SUBDRAIN



KEYWAY SUBDRAIN - OPTION 2

*FILTER MEDIUM

ALTERNATIVE A

CLASS 2 PERMEABLE MATERIAL

MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADING REQUIREMENTS:

SIEVE SIZE	% PASSING SIEVE
1"	100
3/4"	90–100
3/8"	40–100
#4	25–40
#8	18–33
#30	5–15
#50	0–7
#200	0–3

ALTERNATIVE B

CLEAN CRUSHED ROCK OR GRAVEL WRAPPED IN FILTER FABRIC

ALL FILTER FABRIC SHALL MEET THE FOLLOWING MINIMUM AVERAGE ROLL VALUES UNLESS OTHERWISE SPECIFIED BY ENGEO:

GRAB STRENGTH (ASTM D-4632)	180 lbs
MASS PER UNIT AREA (ASTM D-4751)	6 oz/yd^2
APPARENT OPENING SIZE (ASTM D-4751)	70-100 U.S. STD. SIEVE
FLOW RATE (ASTM D-4491)	80 gal/min/ft
PUNCTURE STRENGTH (ASTM D-4833)	80 lbs

NOTES:

1. *ALL PIPE JOINTS SHALL BE GLUED*
2. *ALL PERFORATED PIPE PLACED PERFORATIONS DOWN*
3. *1% FALL (MINIMUM) ON ALL TRENCHES AND DRAIN LINES*

ENGEO
Expect Excellence

TYPICAL SUBDRAIN DETAIL
CAMEL HILL VINEYARDS
LOS GATOS, CALIFORNIA

PROJECT NO.: 13831.002.000	FIGURE NO. 9
SCALE: NO SCALE	
DRAWN BY: CC	CHECKED BY: JBR

APPENDIX A

TEST PIT LOGS (ENGEO)

TEST PIT LOG 1-TP1

Latitude: 37.1892 Longitude: -122.0027

Camel Hill Vineyards
Los Gatos, California
13831.002.000

Logged By: K. Wang
Logged Date: April 12, 2023
Equipment: 18-inch bucket excavator

Depth (Feet)	Description	Depth of Test (Feet)	Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)
0 – 8	Fat CLAY with sand and gravel (CH), very dark brown, soft to medium stiff, moist, medium- to coarse-grained sand, fine to coarse gravel. [LANDSLIDE DEBRIS]				
8 – 10	Clayey SAND with gravel (SC), dark brown, moist, coarse-grained sand, fine to coarse gravel [LANDSLIDE DEBRIS]				
	End of test pit at approximately 10 feet below ground surface. No groundwater encountered.				

TEST PIT LOG 1-TP2

Latitude: 37.1891 Longitude: -122.0027

ENGEO Expect Excellence	
Camel Hill Vineyards Los Gatos, California 13831.002.000	Logged By: K. Wang Logged Date: April 12, 2023 Equipment: 18-inch bucket excavator

Depth (Feet)	Description	Depth of Test (Feet)	Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)
0 – 8	Clayey SAND with gravel (SC), very dark brown, moist, fine- to coarse-grained sand, fine gravel. [LANDSLIDE DEBRIS] At 3½ feet, pocket of water seepage encountered.	2	19	41	
8 – 10	Becomes yellowish brown mottled with bluish gray, wet, coarse gravel, 3- to 4-inch cobble, subangular. [LANDSLIDE DEBRIS] End of test pit at approximately 10 feet below ground surface. No groundwater encountered.				

TEST PIT LOG 1-TP3

Latitude: 37.1892 Longitude: -122.0026

ENGEO — Expect Excellence

Camel Hill Vineyards
Los Gatos, California
13831.002.000

Logged By: K. Wang
Logged Date: April 12, 2023
Equipment: 18-inch bucket excavator

Depth (Feet)	Description	Depth of Test (Feet)	Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)
0 – 2	Sandy CLAY with gravel (SC), dark brown, soft, moist, subangular, fine- to medium-grained sand. [LANDSLIDE DEBRIS]				
2 – 9	LEAN CLAY with gravel (CL), dark yellowish brown, soft, moist, estimate 30 percent fine subangular gravel, subangular cobble. [LANDSLIDE DEBRIS]	4	19		
	At 5 feet, able to advance t-probe 10 inches with nominal effort.				
9 – 10	LEAN CLAY with sand and gravel (CL), yellowish brown, medium stiff, moist, medium- to coarse-grained sand, fine gravel, trace cobble. [LANDSLIDE DEBRIS]				
	End of test pit at approximately 10 feet below ground surface. No groundwater encountered.				

TEST PIT LOG 1-TP4

Latitude: 37.1888 Longitude: -122.0008

ENGEO — Expect Excellence	
Camel Hill Vineyards Los Gatos, California 13831.002.000	Logged By: K. Wang Logged Date: April 12, 2023 Equipment: 18-inch bucket excavator

Depth (Feet)	Description	Depth of Test (Feet)	Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)
0 – 2	Clayey SAND with gravel (SC), dark brown mottled with reddish brown, medium dense, moist, medium- to coarse-grained sand, estimate 20 percent fine to coarse gravel. [FILL]				
2 – 5½	Sandy LEAN CLAY with gravel (CL), dark brown, moist, stiff, fine- to coarse-grained sand, fine to coarse gravel, trace cobble. [FILL]	4		44	
	At 5 feet, able to advance t-probe 4 inches with nominal effort.				
5½ – 7½	SILTSTONE, dark bluish gray, weathered, medium strength, rock fragments embedded (schist?) [NATIVE]				
	End of test pit at approximately 7½ feet below ground surface. No groundwater encountered.				

ENGEO Expect Excellence	TEST PIT LOG 1-TP5 Latitude: 37.1888 Longitude: -122.0011
Camel Hill Vineyards Los Gatos, California 13831.002.000	Logged By: K. Wang Logged Date: April 12, 2023 Equipment: 18-inch bucket excavator

Depth (Feet)	Description	Depth of Test (Feet)	Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)
0 – 3	Poorly graded SAND with clay and gravel (SP-SC), dark brown, moist, coarse-grained sand, fine subangular gravel. [FILL]				
3 – 7½	LEAN CLAY with gravel (CL), dark gray mottled with yellowish brown, medium stiff, moist, fine gravel. [FILL]				
7½ – 9	SILTSTONE, dark gray, weathered, medium strength. [NATIVE]				
	End of test pit at approximately 9 feet below ground surface. No groundwater encountered.				

TEST PIT LOG 1-TP6

Latitude: 37.1888 Longitude: -122.0013

Camel Hill Vineyards Los Gatos, California 13831.002.000	Logged By: K. Wang Logged Date: April 12, 2023 Equipment: 18-inch bucket excavator

Depth (Feet)	Description	Depth of Test (Feet)	Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)
0 – 4	Poorly Graded SAND with clay and gravel (SP-SC), dark brown, moist, coarse-grained sand, fine to coarse angular to subangular gravel. [FILL]				
4 – 6	Silty SAND with gravel (SM), dark yellowish brown, loose, moist, fine- to coarse-grained sand, fine to coarse subangular gravel. [FILL]				
	At 5 feet, able to advance t-probe 7 inches with nominal effort.	5		17	
6 – 8	SILTSTONE, dark gray mottled with brown, medium strength, weathered. [NATIVE]				
	End of test pit at approximately 8 feet below ground surface. No groundwater encountered.				

TEST PIT LOG 1-TP7

Latitude: 37.1889 Longitude: -122.0009

ENGEO Expect Excellence	
Camel Hill Vineyards Los Gatos, California 13831.002.000	Logged By: K. Wang Logged Date: April 14, 2023 Equipment: 18-inch bucket excavator

Depth (Feet)	Description	Depth of Test (Feet)	Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)
0 – 3	FAT CLAY (CH), dark brown, soft, moist. [LANDSLIDE DEBRIS]				
3 – 6	Clayey SAND (SC), dark gray, moist, coarse-grained sand. [LANDSLIDE DEBRIS]	3		40	
6 – 9	Sandy CLAY with gravel (SC), yellowish brown, medium stiff, moist, medium- to coarse-grained sand, fine to coarse subangular gravel. [LANDSLIDE DEBRIS]				
	End of test pit at approximately 9 feet below ground surface. No groundwater encountered.				

APPENDIX B

KEY TO BORING LOGS
EXPLORATION LOGS (ENGEO)

KEY TO BORING LOGS

MAJOR TYPES			DESCRIPTION
COARSE-GRAINED SOILS MORE THAN HALF OF MAT'L LARGER THAN #200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LESS THAN 5% FINES	GW - Well graded gravels or gravel-sand mixtures
			GP - Poorly graded gravels or gravel-sand mixtures
		GRAVELS WITH OVER 12 % FINES	GM - Silty gravels, gravel-sand and silt mixtures
			GC - Clayey gravels, gravel-sand and clay mixtures
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 5% FINES	SW - Well graded sands, or gravelly sand mixtures
			SP - Poorly graded sands or gravelly sand mixtures
		SANDS WITH OVER 12 % FINES	SM - Silty sand, sand-silt mixtures
			SC - Clayey sand, sand-clay mixtures
FINE-GRAINED SOILS MORE THAN HALF OF MAT'L SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50 % OR LESS		ML - Inorganic silt with low to medium plasticity
			CL - Inorganic clay with low to medium plasticity
			OL - Low plasticity organic silts and clays
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50 %		MH - Elastic silt with high plasticity
			CH - Fat clay with high plasticity
			OH - Highly plastic organic silts and clays
	HIGHLY ORGANIC SOILS		PT - Peat and other highly organic soils

For fine-grained soils with 15 to 29% retained on the #200 sieve, the words "with sand" or "with gravel" (whichever is predominant) are added to the group name.

For fine-grained soil with >30% retained on the #200 sieve, the words "sandy" or "gravelly" (whichever is predominant) are added to the group name.

GRAIN SIZES

U.S. STANDARD SERIES SIEVE SIZE: 200, 40, 10, 4 — CLEAR SQUARE SIEVE OPENINGS: 3/4 ", 3", 12"

SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FOOT (S.P.T.)
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CONSISTENCY

SILTS AND CLAYS	STRENGTH*
VERY SOFT	0-1/4
SOFT	1/4-1/2
MEDIUM STIFF	1/2-1
STIFF	1-2
VERY STIFF	2-4
HARD	OVER 4

MOISTURE CONDITION

DRY	Dusty, dry to touch
MOIST	Damp but no visible water
WET	Visible freewater

SAMPLER SYMBOLS

- Modified California (3" O.D.) sampler
- California (2.5" O.D.) sampler
- S.P.T. - Split spoon sampler
- Shelby Tube
- Dames and Moore Piston
- Continuous Core
- Bag Samples
- Grab Samples
- NR No Recovery

LINE TYPES

- Solid - Layer Break
- Dashed - Gradational or approximate layer break

GROUNDWATER SYMBOLS

- Groundwater level during drilling
- Stabilized groundwater level

(S.P.T.) Number of blows of 140 lb. hammer falling 30" to drive a 2-inch O.D. (1-3/8 inch I.D.) sampler

* Unconfined compressive strength in tons/sq. ft., asterisk on log means determined by pocket penetrometer

ENGEO Expect Excellence

ENGEO
Expect Excellence

LOG OF BORING 1-B1

LATITUDE: 37.18912 LONGITUDE: -122.00269

Geotechnical Exploration
Camel Hill Vineyards
Los Gatos, California
13831.002.000

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 26½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (NAD83): Approx. 867 ft.

LOGGED / REVIEWED BY: K. Wang / JR
DRILLING CONTRACTOR: Britton Exploration
DRILLING METHOD: HSA / Dry Core
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			SANDY FAT CLAY WITH GRAVEL (CH), dark gray mottled with reddish brown, moist, fine- to coarse-grained sand, fine to coarse subangular gravel, organics [LANDSLIDE DEBRIS]										
	865									42			
5													
			CLAYEY SAND (SC), yellowish brown, moist, estimate 40 percent fines, fine to coarse subangular gravel [LANDSLIDE DEBRIS] Dark gray										
	860												
			POORLY GRADED SAND (SP), yellowish brown, moist, meidum- to coarse-grained sand [LANDSLIDE DEBRIS]										
			Dark brown										
10													
			Roots, gravel pocket										
	855												
			SANDSTONE, very dark gray, weak (R2), crushed, thin bedding, moderately weathered (WM), moist, oxidized iron										
15													
			Dark gray, shear plane (possible slide plane) at 30 degrees										
	850												
			Greenish gray										
			Dark gray										
20													

LOG OF BORING 1-B1

LATITUDE: 37.18912 LONGITUDE: -122.00269

Geotechnical Exploration
Camel Hill Vineyards
Los Gatos, California
13831.002.000

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 26½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (NAD83): Approx. 867 ft.

LOGGED / REVIEWED BY: K. Wang / JR
DRILLING CONTRACTOR: Britton Exploration
DRILLING METHOD: HSA / Dry Core
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			SANDSTONE, very dark gray, weak (R2), crushed, thin bedding, moderately weathered (WM), moist, oxidized iron										
			Closely fractured										
	845												
											8.7	123.2	3.18
25													
						52							
			Boring terminated at approximately 26½ feet below ground surface. Groundwater not encountered during drilling. Backfilled with cement grout.										

LOG OF BORING 1-B2

ENGEO — Expect Excellence

LATITUDE: 37.18911 LONGITUDE: -122.00266

Geotechnical Exploration
Camel Hill Vineyards
Los Gatos, California
13831.002.000

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 31½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (NAD83): Approx. 860 ft.

LOGGED / REVIEWED BY: K. Wang / JR
DRILLING CONTRACTOR: Britton Exploration
DRILLING METHOD: HSA / Dry Core
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	860		CLAYEY SAND (SC), dark brown, moist, coarse-grained sand, organics [LANDSLIDE DEBRIS]										
1			SANDY FAT CLAY (CH), dark reddish brown, stiff, moist, trace fine gravel [LANDSLIDE DEBRIS]										
2													2.0*
3			Gravel content increases to 25 percent (estimate)										
5	855												
6			POORLY GRADED SAND WITH GRAVEL (SP), reddish brown, moist, coarse-grained sand, trace fine gravel [LANDSLIDE DEBRIS]										
7			FAT CLAY WITH SAND (CH), dark gray, moist, coarse-grained sand, trace subangular coarse grain subangular gravel [LANDSLIDE DEBRIS]										
10	850												
11.5			Gravel pocket, subangular										
14			SANDSTONE, dark gray, weak (R2), closely fractured, moderately weathered (WM), moist										
15	845		Crushed										
17			Gouge										
18			Very dark gray, highly weathered (WH), oxidized										
20	840												

ENGEO
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LOG OF BORING 1-B2

LATITUDE: 37.18911 LONGITUDE: -122.00266

Geotechnical Exploration
Camel Hill Vineyards
Los Gatos, California
13831.002.000

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 31½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (NAD83): Approx. 860 ft.

LOGGED / REVIEWED BY: K. Wang / JR
DRILLING CONTRACTOR: Britton Exploration
DRILLING METHOD: HSA / Dry Core
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			SANDSTONE, dark gray, weak (R2), closely fractured, moderately weathered (WM), moist										
			Possible slide plane										
25	835		Yellowish brown										
30	830					83							
			Boring terminated at approximately 31½ feet below ground surface. Groundwater not encountered during drilling. Backfilled with cement grout.										

LOG - GEOTECHNICAL W/ELEV. 13831002000 GINT LOGS.GPJ ENGEO INC.GDT 6/15/23

LOG OF BORING 1-B3

ENGEO
Expect Excellence

LATITUDE: 37.18923 LONGITUDE: -122.00289

Geotechnical Exploration
Camel Hill Vineyards
Los Gatos, California
13831.002.000

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 36½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (NAD83): Approx. 885 ft.

LOGGED / REVIEWED BY: K. Wang / JR
DRILLING CONTRACTOR: Britton Exploration
DRILLING METHOD: HSA / Dry Core
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			CLAYEY SAND (SC), dark brown, moist, coarse-grained sand, organics, estimate 35 percent fines, and estimate 10 percent fine gravel [FILL]										
5	880		POORLY GRADED SAND WITH GRAVEL (SP), dark brown, moist, coarse-grained sand, fine to coarse gravel [FILL]										
			Reddish brown mottled with gray										
10	875		POORLY GRADED SAND WITH CLAY AND GRAVEL (SP-SC), dark reddish brown, moist, coarse-grained sand, fine to coarse gravel [FILL]										
			Dark brown										
15	870		SANDY FAT CLAY WITH GRAVEL (CH), dark brown, medium stiff, moist, fine-grained sand, fine to coarse gravel [FILL]										1.5*
			Gravel pocket, subangular to angular										
20	865		CLAYEY SANDSTONE, yellowish brown, weak (R2), closely fractured, thin bedding, moderately weathered (WM), coarse-grained, moist										

LOG OF BORING 1-B3

ENGEO
Expect Excellence

LATITUDE: 37.18923 LONGITUDE: -122.00289

Geotechnical Exploration
Camel Hill Vineyards
Los Gatos, California
13831.002.000

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 36½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (NAD83): Approx. 885 ft.

LOGGED / REVIEWED BY: K. Wang / JR
DRILLING CONTRACTOR: Britton Exploration
DRILLING METHOD: HSA / Dry Core
HAMMER TYPE: 140 lb. Auto Trip

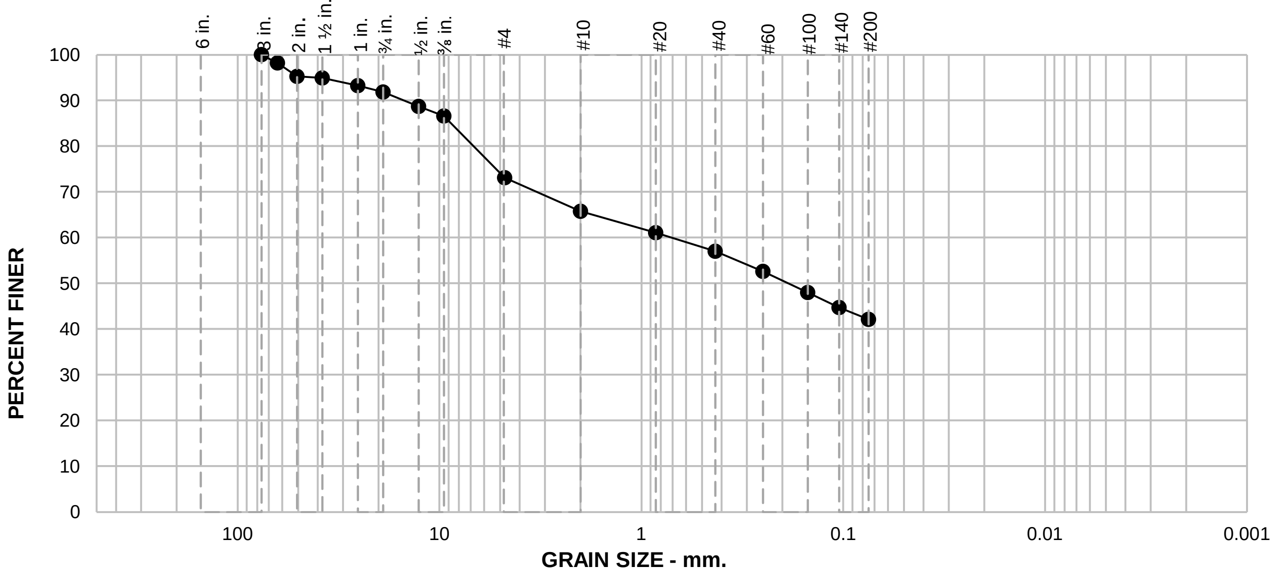
Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			CLAYEY SANDSTONE, yellowish brown, weak (R2), closely fractured, thin bedding, moderately weathered (WM), coarse-grained, moist										
25	860												
			GRAYWACKE, light gray, weak (R2), closely fractured, thin bedding, moderately weathered (WM), fine- to coarse-grained, moist										
30	855												
35	850					24							
			Boring terminated at approximately 36½ feet below ground surface. Groundwater not encountered during drilling. Backfilled with cement grout.										

APPENDIX C

LABORATORY TEST RESULTS (ENGEO)

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D6913, Method B



SAMPLE ID: 1-B1

DEPTH (ft): 0-5

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
	8.2	18.7	7.4	8.7	14.9	42.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100.0		
2.5 in.	98.2		
2 in.	95.3		
1-½ in.	94.9		
1 in.	93.2		
¾ in.	91.8		
½ in.	88.7		
⅜ in.	86.6		
#4	73.1		
#10	65.7		
#20	61.1		
#40	57.0		
#60	52.6		
#100	48.0		
#140	44.7		
#200	42.1		

SOIL DESCRIPTION

Dark brown sandy CLAY with gravel

ATTERBERG LIMITS

PL = LL = PI =

COEFFICIENTS

D_{90} = 15.0539 mm	D_{85} = 8.7711 mm	D_{60} = 0.7080 mm
D_{50} = 0.1873 mm	D_{30} =	D_{15} =
D_{10} =	C_u =	C_c =

CLASSIFICATION

USCS =

REMARKS

USCS: ASTM D2488

* (no specification provided)

CLIENT: Camel Hill Vinyards

PROJECT NAME: 18915 Bear Creek Road

PROJECT NO: 13831.002.000

PROJECT LOCATION: Los Gatos, CA

REPORT DATE: 5/9/2023

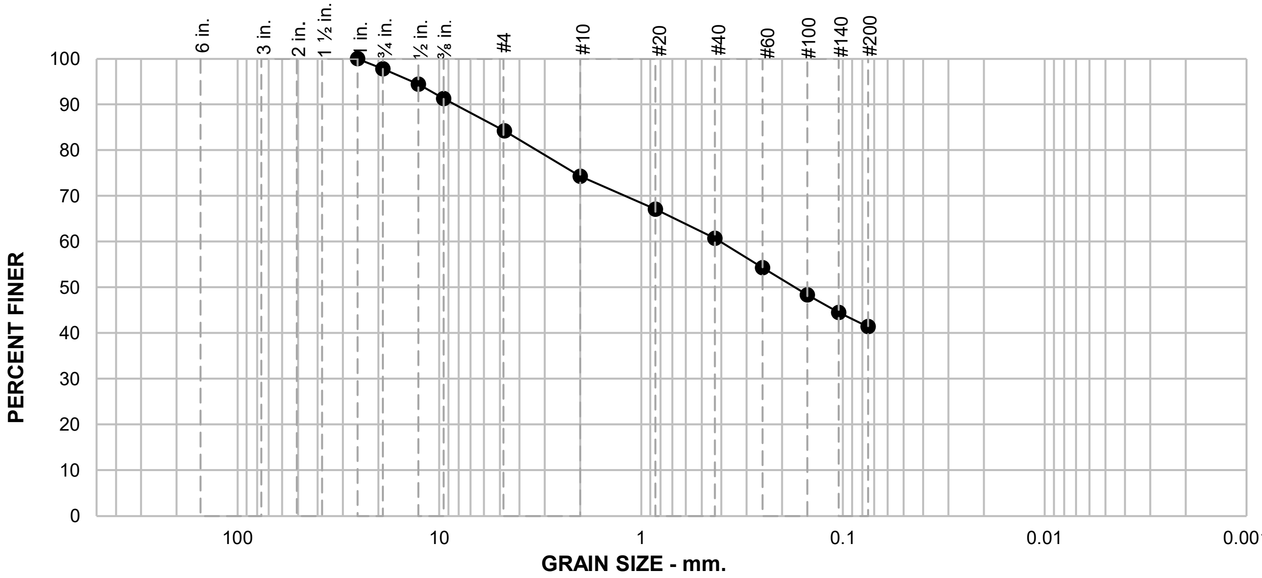
TESTED BY: B. Ross

REVIEWED BY: W. Miller

ENGEO — Expect Excellence

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D6913, Method A



SAMPLE ID: 1-TP2@2

DEPTH (ft): 2

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
	2	14	10	14	19	41	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 in.	100		
¾ in.	98		
½ in.	94		
⅜ in.	91		
#4	84		
#10	74		
#20	67		
#40	61		
#60	54		
#100	48		
#140	45		
#200	41		

SOIL DESCRIPTION

See exploration logs

ATTERBERG LIMITS

PL = LL = PI =

COEFFICIENTS

D_{90} = 8.6238 mm	D_{85} = 5.2464 mm	D_{60} = 0.3979 mm
D_{50} = 0.1778 mm	D_{30} =	D_{15} =
D_{10} =	C_u =	C_c =

CLASSIFICATION

USCS =

REMARKS

* (no specification provided)

CLIENT: Camel Hill Vineyards

PROJECT NAME: 18915 Bear Creek Road - Los Gatos

PROJECT NO: 13831.002.000 PH003

PROJECT LOCATION: Los Gatos, CA

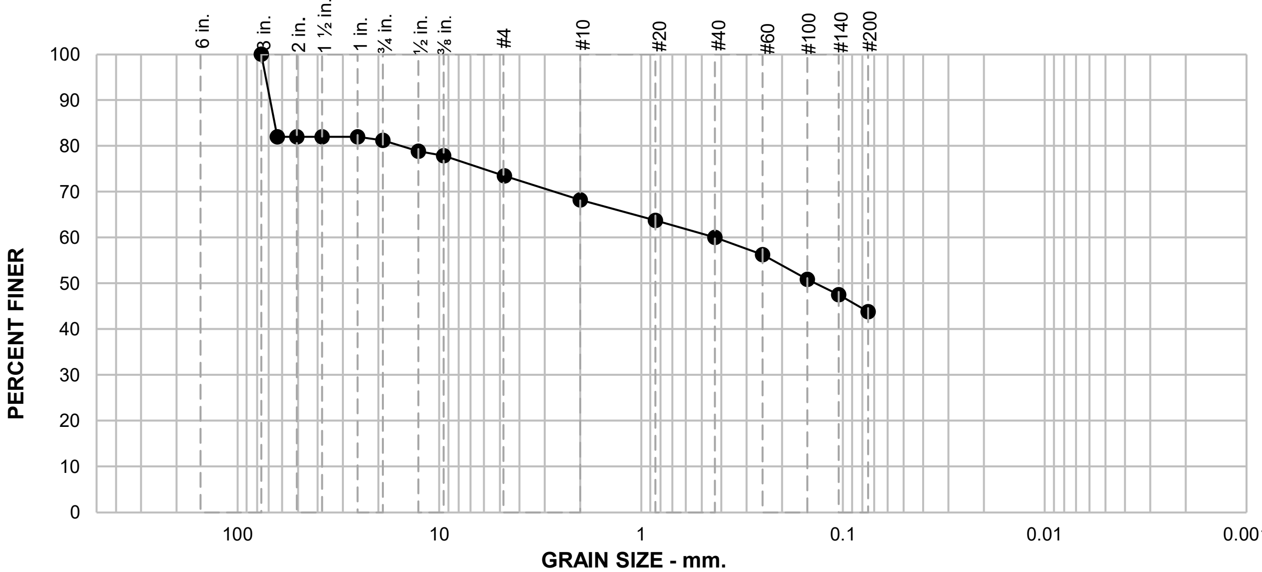
REPORT DATE: 5/3/2023

TESTED BY: G. Criste

REVIEWED BY: D. Seibold

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D6913, Method B



SAMPLE ID: 1-TP4@4

DEPTH (ft): 4

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
	18.8	7.7	5.3	8.2	16.2	43.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3 in.	100.0		
2.5 in.	81.9		
2 in.	81.9		
1-½ in.	81.9		
1 in.	81.9		
¾ in.	81.2		
½ in.	78.8		
⅜ in.	77.8		
#4	73.5		
#10	68.2		
#20	63.7		
#40	60.0		
#60	56.3		
#100	50.9		
#140	47.5		
#200	43.8		

* (no specification provided)

SOIL DESCRIPTION

See exploration logs

ATTERBERG LIMITS

PL = LL = PI =

COEFFICIENTS

D_{90} = #DIV/0! D_{85} = #DIV/0! D_{60} = 0.4300 mm

D_{50} = 0.1365 mm D_{30} = D_{15} =

D_{10} = C_u = C_c =

CLASSIFICATION

USCS =

REMARKS

ENGEO
Expect Excellence

CLIENT: Camel Hill Vineyards

PROJECT NAME: 18915 Bear Creek Road - Los Gatos

PROJECT NO: 13831.002.000 PH003

PROJECT LOCATION: Los Gatos, CA

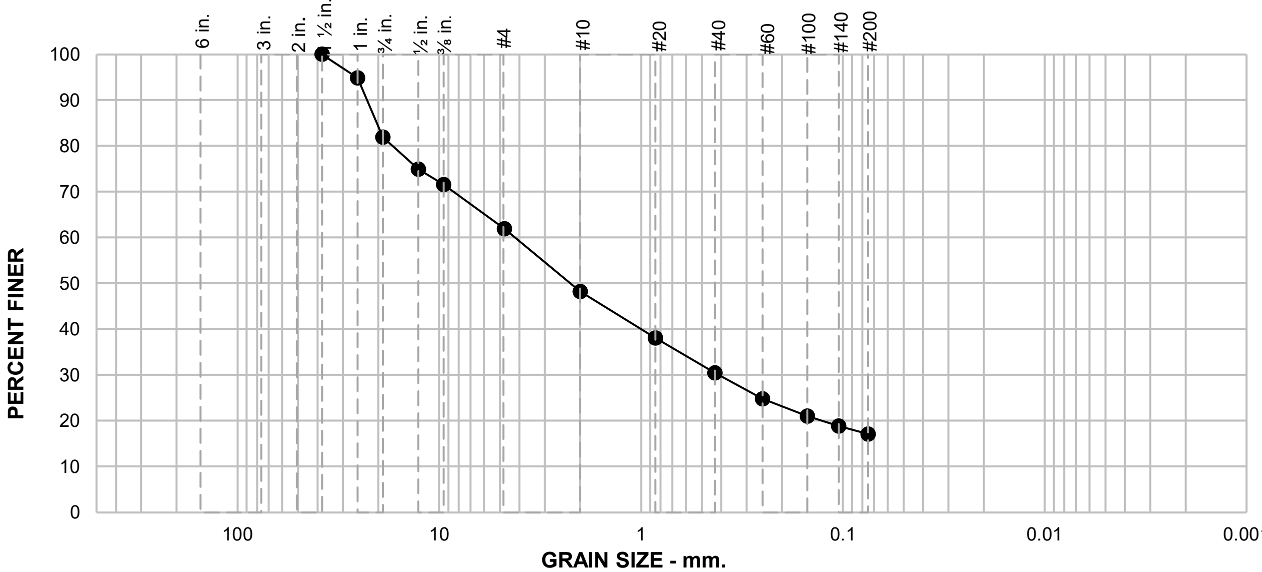
REPORT DATE: 5/3/2023

TESTED BY: G. Criste

REVIEWED BY: D. Seibold

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D6913, Method B



SAMPLE ID: 1-TP6@5

DEPTH (ft): 5

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
	18.1	20.0	13.7	17.8	13.3	17.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1-½ in.	100.0		
1 in.	94.8		
¾ in.	81.9		
½ in.	74.9		
⅜ in.	71.5		
#4	61.9		
#10	48.2		
#20	38.1		
#40	30.4		
#60	24.8		
#100	21.0		
#140	18.9		
#200	17.1		

SOIL DESCRIPTION

See exploration logs

ATTERBERG LIMITS

PL = LL = PI =

COEFFICIENTS

D_{90} = 22.8215 mm D_{85} = 20.4136 mm D_{60} = 4.2130 mm

D_{50} = 2.2407 mm D_{30} = 0.4137 mm D_{15} =

D_{10} = C_u = C_c =

CLASSIFICATION

USCS =

REMARKS

* (no specification provided)

ENGEO
Expect Excellence

CLIENT: Camel Hill Vineyards

PROJECT NAME: 18915 Bear Creek Road - Los Gatos

PROJECT NO: 13831.002.000 PH003

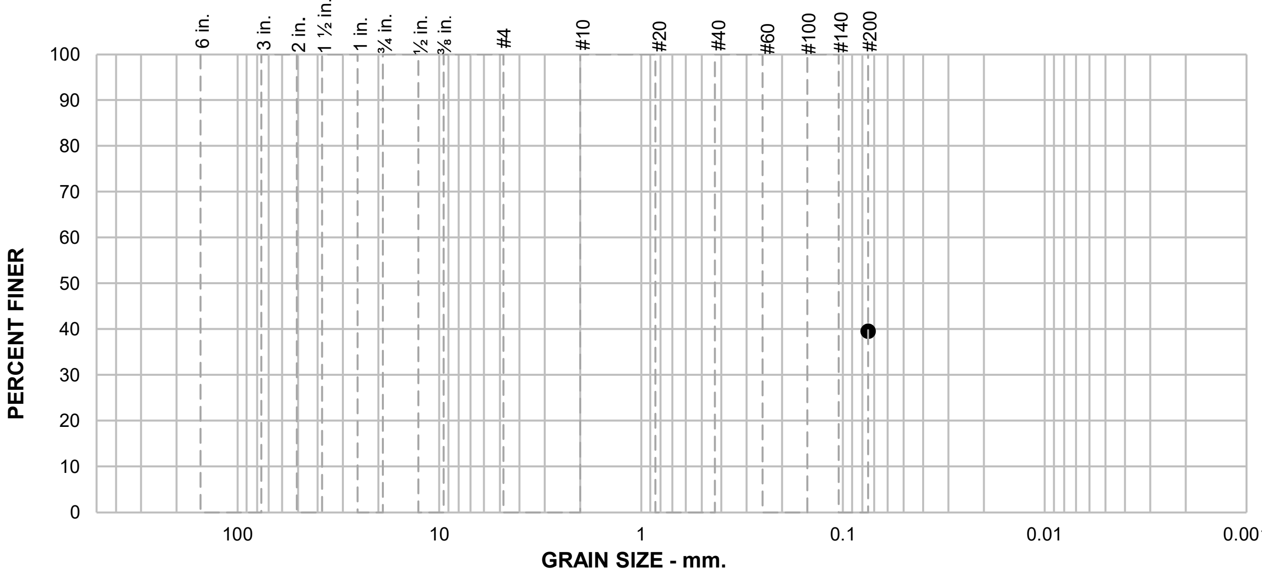
PROJECT LOCATION: Los Gatos, CA

REPORT DATE: 5/3/2023

TESTED BY: G. Criste

REVIEWED BY: D. Seibold

PARTICLE SIZE DISTRIBUTION REPORT
ASTM D1140, Method B



SAMPLE ID: 1-TP7@3

DEPTH (ft): 3

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
						39.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	39.5		

* (no specification provided)

SOIL DESCRIPTION

See exploration logs

ATTERBERG LIMITS

PL = LL = PI =

COEFFICIENTS

D_{90} = D_{85} = D_{60} =

D_{50} = D_{30} = D_{15} =

D_{10} = C_u = C_c =

CLASSIFICATION

USCS =

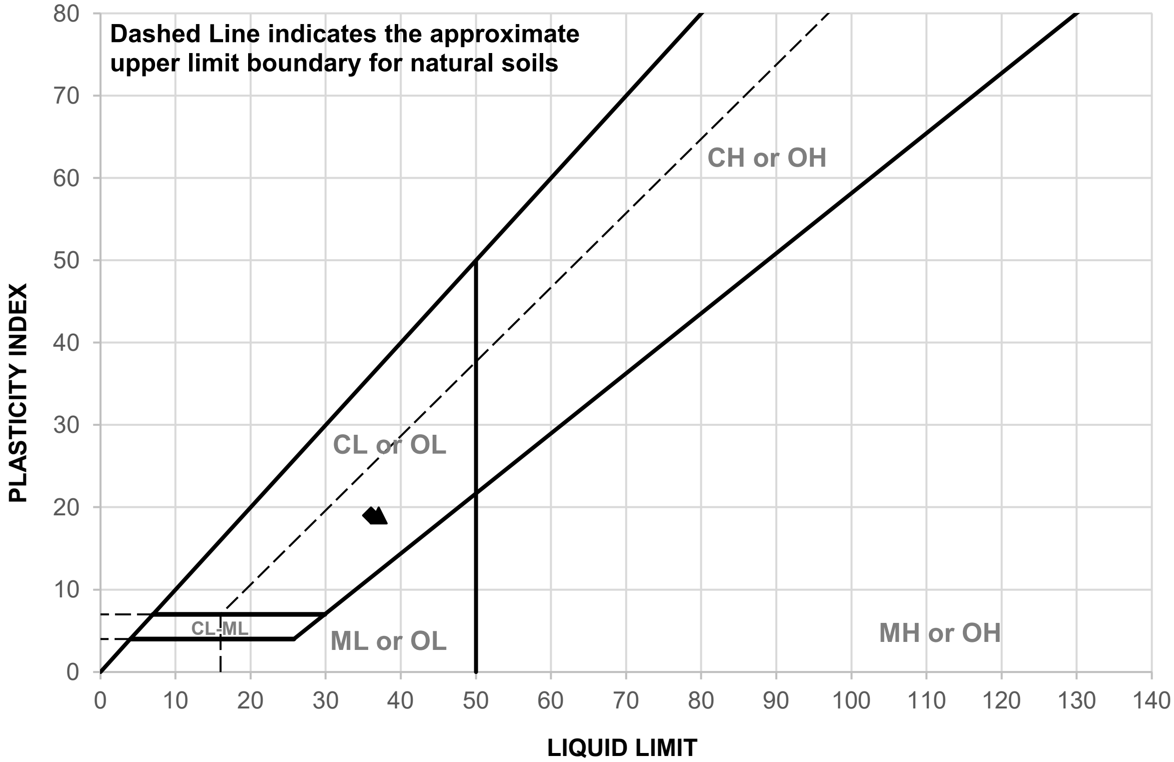
REMARKS

Soak time = 360 min
Dry sample weight = 1584.3 g
Largest particle size ≥ No. 4 Sieve

ENGEO
Expect Excellence

CLIENT: Camel Hill Vineyards
PROJECT NAME: 18915 Bear Creek Road - Los Gatos
PROJECT NO: 13831.002.000 PH003
PROJECT LOCATION: Los Gatos, CA
REPORT DATE: 5/2/2023
TESTED BY: G. Criste
REVIEWED BY: D. seibold

LIQUID AND PLASTIC LIMITS TEST REPORT
ASTM D4318



	SAMPLE ID	DEPTH (ft)	MATERIAL DESCRIPTION	LL	PL	PI
▲	1-TP2@2	2	See exploration logs	37	18	19
◆	1-TP3@4	4	See exploration logs	36	17	19

	SAMPLE ID	TEST METHOD	REMARKS
▲	1-TP2@2	PI: ASTM D4318, Wet Method	
◆	1-TP3@4	PI: ASTM D4318, Wet Method	

ENGEO
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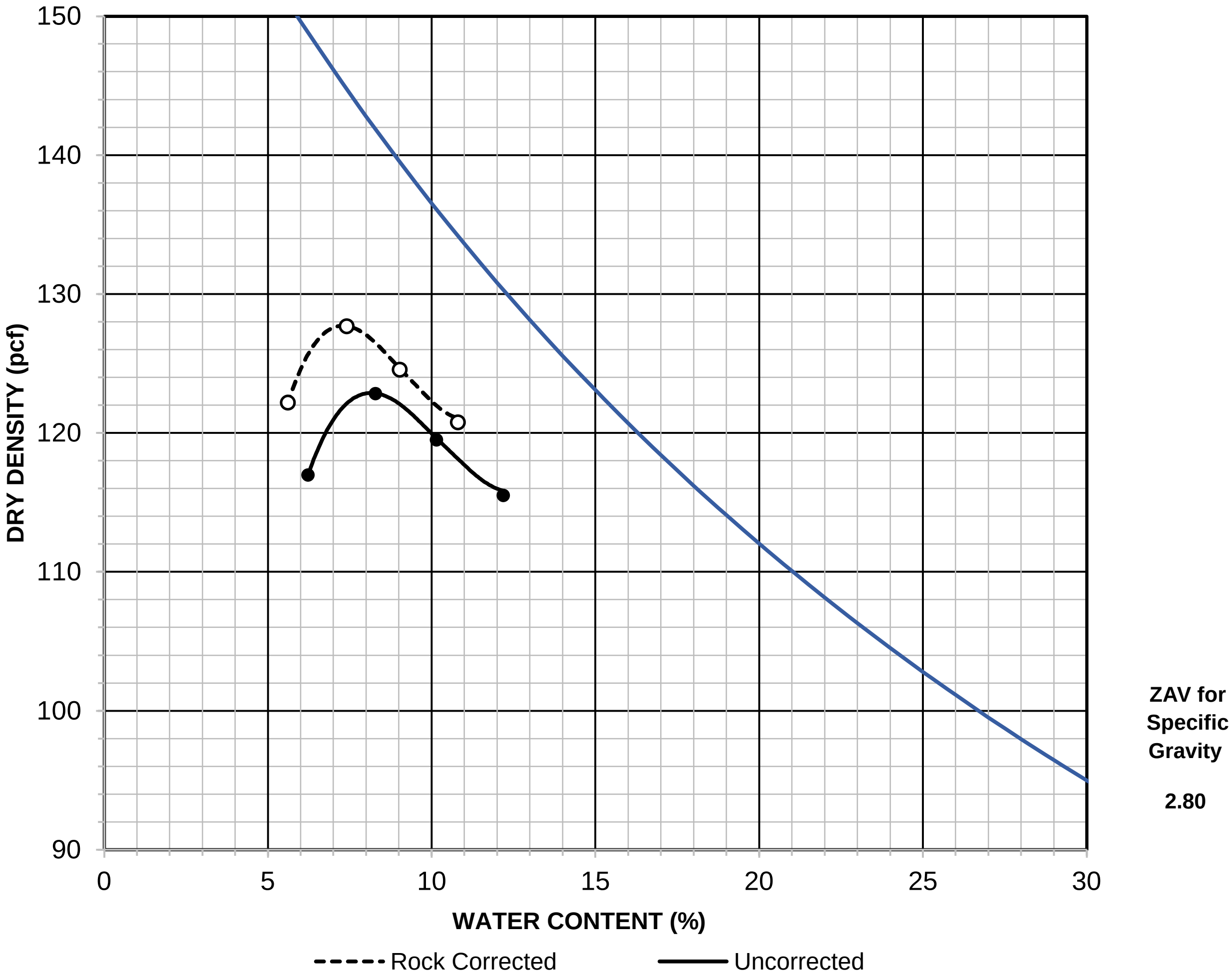
CLIENT: Camel Hill Vineyards
PROJECT NAME: 18915 Bear Creek Road - Los Gatos
PROJECT NO: 13831.002.000 PH003
PROJECT LOCATION: Los Gatos, CA
REPORT DATE: 5/5/2023
TESTED BY: G. Criste
REVIEWED BY: D. Seibold

COMPACTION CURVE REPORT
ASTM D1557



Curve Number: 1

Test Specification: Method B

Sample Location: 1-B1 @ 0-5

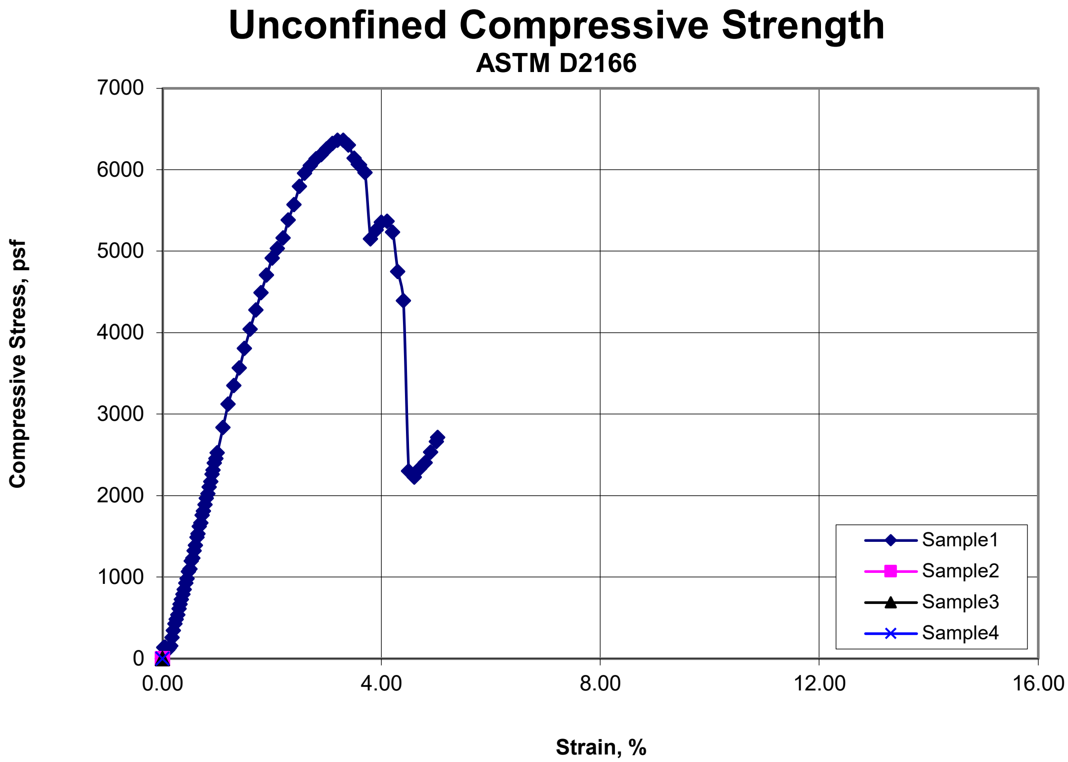
	ROCK CORRECTED	UNCORRECTED	MATERIAL DESCRIPTION - D2488
Maximum Dry Density, pcf	127.7	122.9	Dark brown sandy CLAY with gravel
Optimum Moisture Content, %	7.3	8.1	
Remarks			

ENGEO
Expect Excellence

CLIENT: Camel Hill Vinyards
PROJECT NAME: 18915 Bear Creek Road
PROJECT NO: 13831.002.000
PROJECT LOCATION: Los Gatos, CA
REPORT DATE: 5/9/2023
TESTED BY: B. Ross
REVIEWED BY: W. Miller

APPENDIX D

LABORATORY TEST RESULTS
(COOPER TESTING LABORATORY)

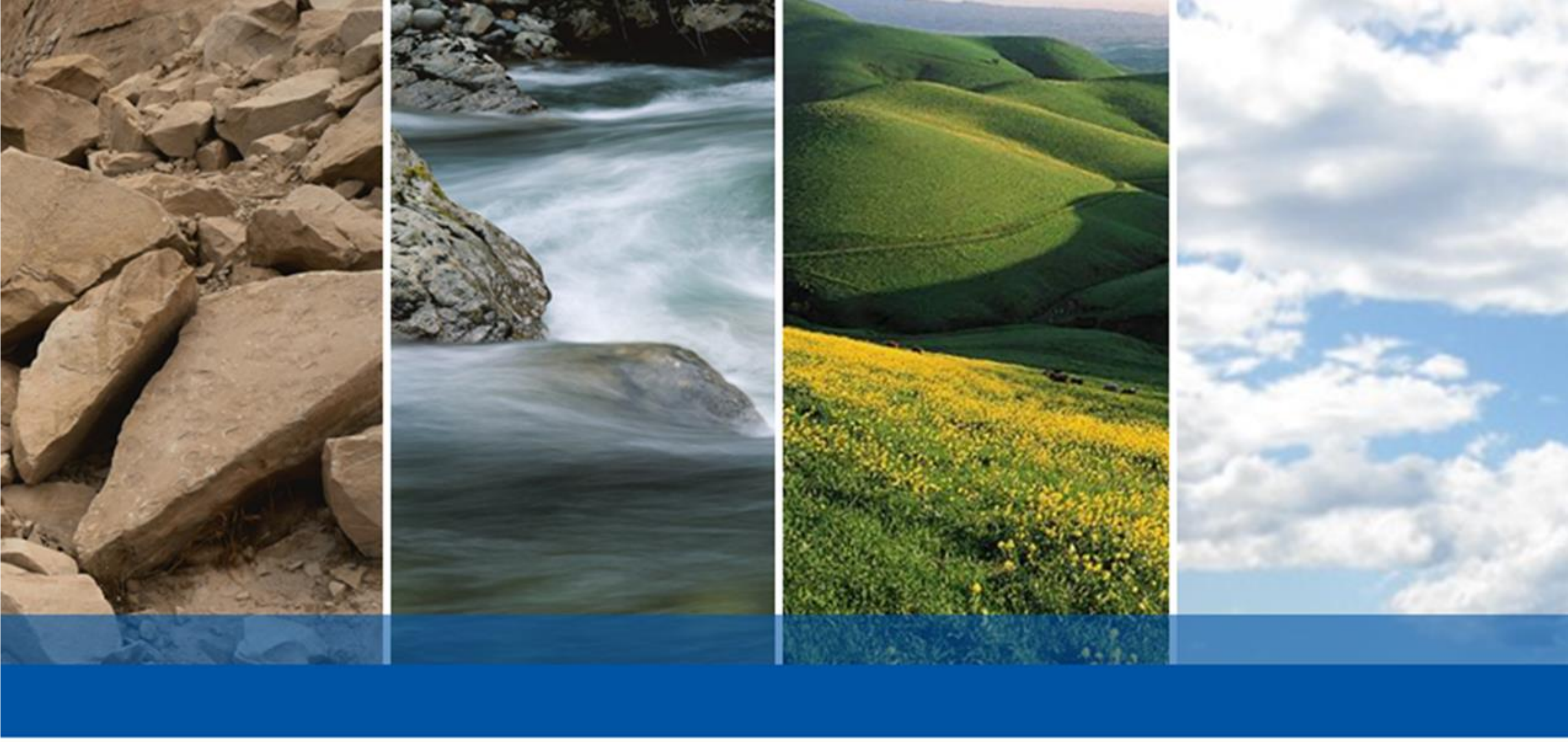


Sample No.:	1	2	3	4	
Unconfined Compressive Strength, psf	6360				
Unconfined Compressive Strength, psi	44.2				
Undrained Shear Strength, psf	3180				
Failure Strain, %	3.2				
Strain Rate, % per minute	1.0				
Strain Rate, inches/minute	0.05				
Moisture Content, %	8.7				
Dry Density, pcf	123.2				
Saturation, %	63.7				
Void Ratio	0.369				
Specimen Diameter, inches	2.263				
Specimen Height, inches	5.00				
Height to Diameter Ratio	2.2				
Assumed Specific Gravity	2.70				

	Sample Location			
	Boring	**Sample**	**Depth, ft.**	**Soil Description**
1	1-B1	1	23	Gray Silty SAND (slightly plastic)
2				
3				
4				

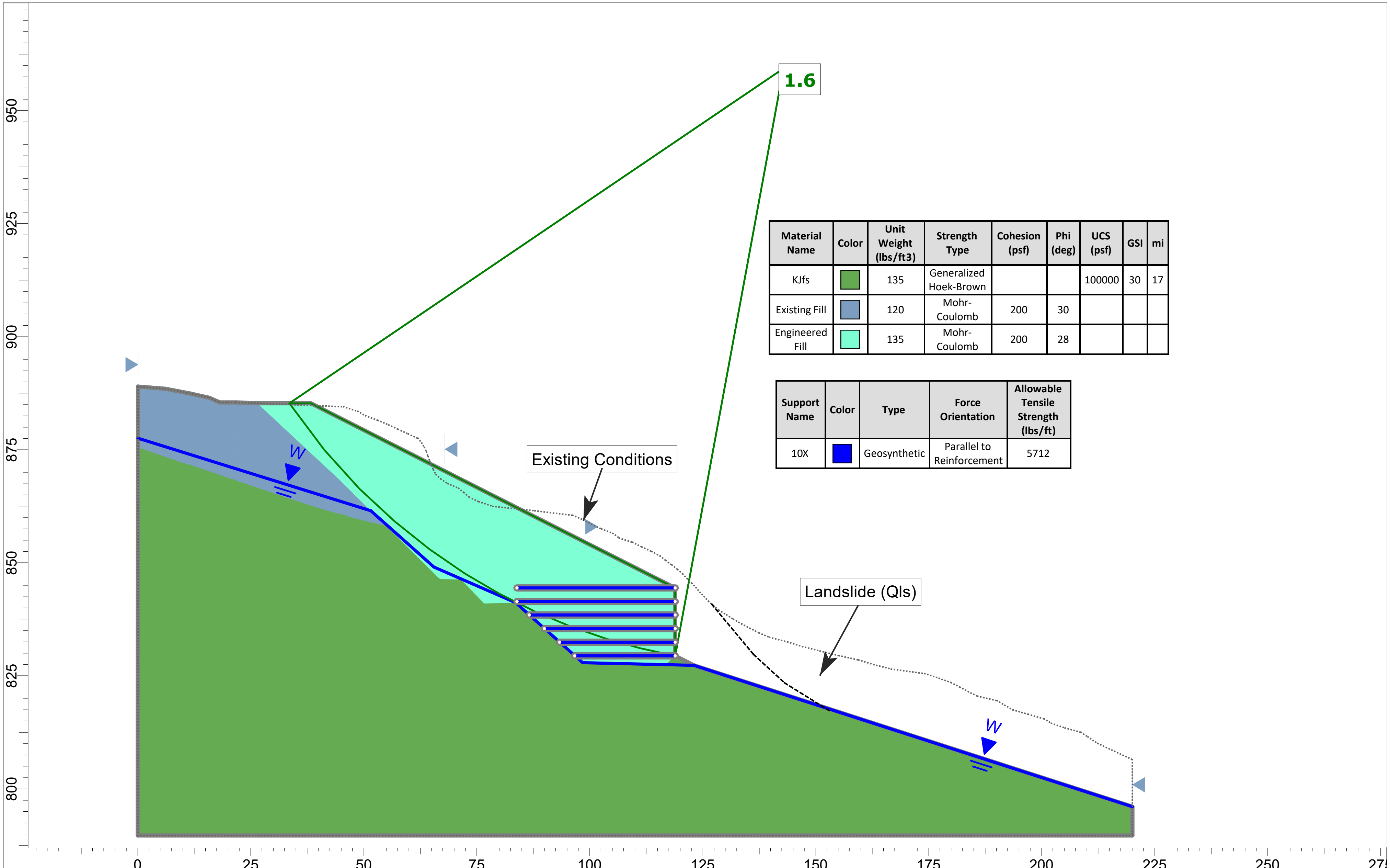
Job No.:	414-164	**Type of Sample**	Undisturbed
Client:	ENGEO		
Project:	13831.002.000	Remarks:	
Date:	5/3/2023 **By:** MD/RU		

COOPER TESTING LABORATORY



APPENDIX E

SLOPE STABILITY RESULTS



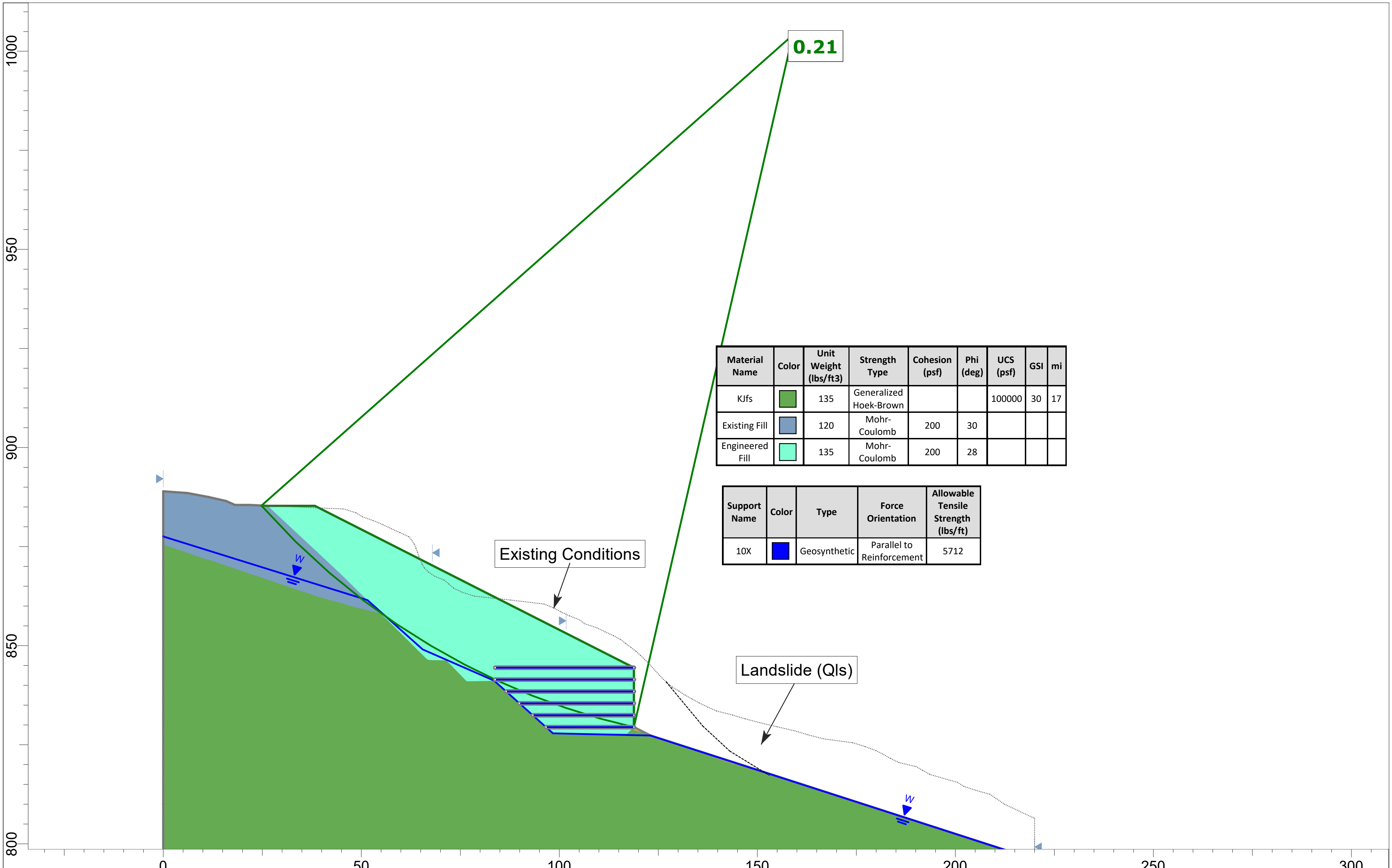
Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	UCS (psf)	GSI	mi
KJfs		135	Generalized Hoek-Brown			100000	30	17
Existing Fill		120	Mohr-Coulomb	200	30			
Engineered Fill		135	Mohr-Coulomb	200	28			

Support Name	Color	Type	Force Orientation	Allowable Tensile Strength (lbs/ft)
10X		Geosynthetic	Parallel to Reinforcement	5712

ENGEO Expect Excellence

SLIDEINTERPRET 9.027

Project	Camel Hill Vineyards		
Scale 1:350	*Author* PE	*Project No.* 13831.002.000	
Date 6/15/2023	Analysis Static		



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	UCS (psf)	GSI	mi
KJfs		135	Generalized Hoek-Brown			100000	30	17
Existing Fill		120	Mohr-Coulomb	200	30			
Engineered Fill		135	Mohr-Coulomb	200	28			

Support Name	Color	Type	Force Orientation	Allowable Tensile Strength (lbs/ft)
10X		Geosynthetic	Parallel to Reinforcement	5712

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SLIDEINTERPRET 9.027

Project	Camel Hill Vineyards		
Scale 1:400	*Author* PE	*Project No.* 13831.002.000	
Date 6/15/2023	*Analysis* Pseudostatic Yield Coefficient		

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