Lehigh Hanson
HEIDELBERGCEMENT Group

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Cupertino, CA 95014
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July 12, 2019

Robert Salisbury
Senior Planner
Department of Planning and Development
County of Santa Clara
70 W. Hedding Street, 7th Floor
San Jose, CA 95110

**Re: Permanente Quarry, Mine ID # 91-43-0004**
**Response to April 29, 2019, Incompleteness Letter and Resubmittal of Utility Road Reclamation Plan Amendment**

Dear Mr. Salisbury:

Lehigh Southwest Cement Company ("Lehigh") has revised its proposed amendment to include the utility road within the reclamation plan boundary. This letter provides explanation of the revisions incorporated in response to Santa Clara County's ("County") April 29, 2019, letter, which stated that the March 25, 2019, application for a reclamation plan amendment was incomplete. The County requested that Lehigh submit a revised application and asked to meet with Lehigh in advance of any resubmittal. Lehigh discussed the letter with County Planning Department staff on May 13, 2019, and has revised the application as described below.

*Comment No. II.1-3: Apply for a Major Reclamation Plan Amendment and Associated Fees*

The County's letter stated that Lehigh's application did not meet the criteria for a "minor" reclamation plan amendment and requested that Lehigh revise its application to seek a "major" amendment and pay the associated fees.

For reference, Section 4.10.370(I)(3)(a) of the County's surface mining ordinance defines "minor" reclamation plan amendments to include modifications that do not expand the area from which mineral deposits are harvested and meet any of the following criteria:

i. Modifications that involve minor changes, such as those that improve drainage, improve slope designs within the reclamation plan boundaries or improve re-vegetation success;
ii. Modifications that adjust the reclamation plan boundaries to incorporate areas disturbed prior to January 1, 1976 or existing components of the mining operation that were established in accordance with all other County requirements.

iii. Approval of interim management plans for idle mines pursuant to subsection L of this section; or
iv. Other modifications that the Planning Director determines do not constitute a substantial deviation from the approved reclamation plan.

The application appears to meet the County's criteria for a minor reclamation plan amendment. The amendment would not expand the area where mining occurs and appears to meet either criterion ii or iv above. Criterion ii seems particularly appropriate because the County has directed Lehigh to process a boundary change to include existing components of the operation. In this regard, the County's letter did not identify any specific aspect of the application that failed to meet the "minor" amendment criteria. Such clarification from the County is appropriate, because classifying as a major amendment will increase the time and delay processing of the amendment.

This transparency would also allow Lehigh to better understand how the minor amendment provisions of the ordinance are being interpreted and provide appropriate guidance for future reclamation plan and boundary modification determinations.

Meanwhile, to move this process forward, payment of additional fees associated with a major reclamation plan amendment application are included with this letter, including the petition to use prior California Environmental Quality Act fees.

*Comment No. II.4: Submit a biological resources report*

The County requests that Lehigh submit a biological resources report that identifies the number of trees and amount of oak woodland removed for the utility road area, including the amount of habitat for rare wildlife or plants removed. Lehigh has already provided this information to the County. On October 31, 2018, Lehigh transmitted a memorandum prepared by GEI arborists that identified the number of trees and oak woodland removed from the utility road area within the County's jurisdiction. The memorandum did not identify any habitat for rare wildlife or plants in this area. That memorandum is attached for your convenience.

*Comment No. II.5: Submit a grading plan.*

The County next requested that Lehigh submit a grading plan that identifies how fill slopes (which presumably refers to fill slopes in the utility road area) will be reconfigured to 2.0H:1.0V or flatter "in order to provide long-term stability (factor of safety ["FOS"] greater than 1.0) under earthquake loading conditions."

The Surface Mining and Reclamation Act ("SMARA") includes performance standards for fill slopes. These are set forth at Code of Regulations, Title 14, section 3704(d), which the County incorporates by reference into its surface mining ordinance. Section 3704(d) allows fill slopes to exceed 2.0H:1.0V if supported by a geologic and engineering analysis demonstrating that the final slopes have a "minimum factor of safety that is suitable for the proposed end use…" Section 3704(d) does not identify a minimum numeric FOS for fill slopes but requires that the FOC be "suitable for the proposed end use" and that slopes are capable of successful revegetation.

As part of its application, Lehigh submitted a geotechnical evaluation prepared by Stantec. Stantec identified the rock types and material strengths, and calculated static and pseudo-static factors of safety for the steepest portion of the fill slope in the utility road area. The March 25, 2019, application, therefore, satisfied SMARA's and the County's requirements.

Nonetheless, in light of the County's comments, Lehigh asked Stantec to consider options for flattening the fill slope and increasing the FOS. After further analysis, Stantec concluded that it is possible to reduce the fill slope angle to 2.0H:1.0V along the vast majority of the length of the road (except for two areas where the original topography was steeper, which are within the City of Cupertino jurisdiction). This redesign increases the pseudo-static FOS to 1.41 or greater for all road segments. Lehigh includes the revised design as part of its application resubmittal.

*Comment No. III.1: Revise the reclaimed width of the utility road*

The County asks that Lehigh revise the proposed reclamation plan amendment to either reclaim the utility road to its prior width (i.e., from 30 to 12 feet wide), or in the alternative, to provide documentation from Pacific Gas and Electric Company (PG&E) stating that the current road width is necessary for PG&E's use. According to the County's letter, this is to ensure that the reclamation plan is consistent with the County's and SMARA's policies and standards.

Neither SMARA nor the County's surface mining ordinance prescribe any maximum width for former mining roads to be compatible for open-space end uses. Public Resources Code section 2772, subdivision (c)(5)(E), provides only that a reclamation plan must identify any roads that will be allowed to remain for the approved end use. In addition, Code of Regulations, Title 14, section 3700(a)(2), generally provides that site reclamation shall be "consistent with the planned or actual subsequent use or uses of the mining site."

Maintaining a 30-foot-wide unpaved road is consistent with open-space uses. General-purpose access roads like this are typical for large undeveloped landholdings. The property covers 3,510 acres, which are mostly undeveloped and difficult to access. Lehigh desires to retain a small number of roads for general purpose access, irrespective of the needs of any utility companies. Accordingly, Lehigh seeks clarification as to the specific policy or standard that requires retained roads to be narrowed to the recommended 12-foot width.

As noted above, however, Lehigh has continued to analyze options for redesigning the road. Flattening the fill slope to 2.0H:1.0V, as described above, would serve to narrow the width of the road to approximately 20 feet in most areas within the revised reclamation plan boundary. Lehigh will, as noted above, include this design change in its resubmittal.

The County also requests a viewshed analysis showing the visibility of the existing utility road from public roadways. The requested visibility analysis is enclosed.

*Comment No. III.2: Retention of the Plant Quarry Road*

The County requests that Lehigh revise its application to show the Plant Quarry Road reclaimed rather than retained for postmining use, on the basis that retention is incompatible with the open space land use.

As Lehigh noted in its response above, SMARA provides only that a reclamation plan must identify any roads that will be allowed to remain for the approved end use. (Pub. Resources Code, § 2772, subd. (c)(5)(E).) SMARA's regulations also generally provide that site reclamation shall be "consistent with the planned or actual subsequent use or uses of the mining site." (Cal. Code of Regs., tit. 14, § 3700(a)(2).)

The proposed reclamation plan amendment meets these requirements because it clearly identifies the roads that will be reclaimed and those that will remain after mine closure to support postmining uses. A general-purpose road that enables access to remote portions of a large property is consistent with open space uses. The Plant Quarry Road is the only access road to the northwestern portion of the 3,510-acre property and is required for access to this area after mining ends.

We further note that the approved reclamation plan already provides for the retention of the westerly segment of this road; adopting a different approach for this easterly segment would conflict with the approved plan. Lehigh therefore requests clarification from the County concerning the policy or standard that prevents Lehigh from maintaining this road for future site access.

*Comment No. III.3: 4.2-acre Maintenance Road*

The County next asks that Lehigh revise its application to remove the 4.2-acre maintenance road area. Lehigh included this area only to ensure consistent treatment of access roads throughout the property. The County has recently instructed Lehigh to place certain access roads under the reclamation plan, although these roads have existed for many years with the County's knowledge. In light of this, Lehigh included this 4.2-acre area in the reclamation plan because it also contains access roads, though they are seldom used. Lehigh proposed to include these roads at this time to avoid future similar allegations that Lehigh is operating outside of its permitted boundaries. To move the process forward, we have excluded this area from the resubmittal.

*Comment No. IV.: CDFW Comments/City of Cupertino*

Lehigh concurs with the County's concern regarding potential impacts to California red-legged frog ("CRLF"). Insofar as the application does not propose any additional mining activities that could potentially affect CRLF, Lehigh is confident that adhering to the existing 2012 conditions of approval are sufficient to ensure that CRLF are protected. Also, Lehigh notes the County's comments with respect to activities in the City of Cupertino's jurisdiction may require the city's approval.

In summary, included is a revised application for a reclamation plan amendment including:

1. fees for a 'major" amendment,

2. the memorandum prepared identifying the number of trees and oak woodland removed,
3. an updated design for reclaiming the utility road that flattens the slopes and narrows the road,
4. a visibility analysis of the utility road, and
5. the 4.2-acre maintenance road area removed from the boundary.

Note that eliminating the 4.2-acre maintenance road area, per the County's direction, does not preclude continued use of these roads as needed for site access and does not address reclamation.

Meanwhile, it is requested that the County clarify:

1. why this application must be explicitly processed as a "major" amendment, given the limited scope and nature of the reclamation boundary adjustment, which is on lands where mining activities are already allowed;
2. identify the specific County policy or standard that requires retained roads to be narrowed to a particular width (such as the recommended 12-foot width); and
3. identify the specific County policy or standard that prevents retaining roads determined by the operator to be important to post-reclamation access (e.g., the Plant Quarry road).

Finally, on May 22, 2019, Lehigh filed an application for a major amendment to its overall reclamation plan. For completeness and consistency, the elements of the above major amendment were incorporated into this revised application relating to the utility road.

We look forward to the County's review, approval, and expedient resolution to this issue.

Sincerely,

Erika Guerra

Erika Guerra
Environmental and Land Management Director
Lehigh Southwest Cement Company

cc: Jacqueline R. Onciano, Director of Planning and Development, Santa Clara County
Rob Eastwood, Planning Manager, AICP, Santa Clara County
Manira Sandhir, Principal Planner, AICP, Santa Clara County
Jim Baker, County Geologist, Santa Clara County
Elizabeth G. Pianca, Lead Deputy County Counsel, Santa Clara County
Kristina Loquist, Office of Supervisor Simitian, Santa Clara County
Paul Fry, Engineering and geology Unit Manager, Division of Mine Reclamation
Roger Lee, Acting Public Works Director, City of Cupertino

# PERMANENTE QUARRY RECLAMATION PLAN MINOR AMENDMENT FOR THE UTILITY ROAD RECLAMATION AND BOUNDARY ADJUSTMENT

## PROJECT DESCRIPTION

### PURPOSE

Lehigh Southwest Cement Company (Lehigh) has prepared this minor reclamation plan amendment (Minor Amendment) to amend the approved June 26, 2012, reclamation plan and to include additional areas within the reclamation plan as requested by the Santa Clara County (County) Planning Department. The amendments will add approximately 36.6 acres of land to the existing reclamation plan boundary to include:

- the existing utility road and the area immediately adjacent to the road that will be used to perform reclamation activities (e.g., erosion control) (1.3 acres of existing disturbed area) and
- the existing Plant Quarry Road (5.4 acres of existing disturbed area.

The Minor Amendment will not expand the area in which mineral deposits are harvested or otherwise expand or change any aspect of the existing surface mining operations. See Figure 1, "Utility Road Footprint and Boundary Adjustment," and Figure 2, "Overall Reclamation Plan Amendment Boundary Adjustment," for a map of these areas.

### RECLAMATION OVERVIEW

The adjustment to the reclamation plan boundary will add approximately 36.6 acres to the existing reclamation plan boundary. This adjustment includes two new areas, as discussed in the following subsections. Figure 2 shows these areas.

#### *Utility Road Area*

The utility road and adjacent area totals 1.3 acres, and all reclamation activities will occur within this area (see Figure 1). The utility access road is a preexisting roadway that was previously limited to general-purpose access and utility company (currently Pacific Gas and Electric Company [PG&E]) access to power lines in the area. A portion of the utility access road is included in the approved reclamation plan (see Figure 3.16-14). In spring 2018, the road was improved to allow off-road haul trucks from the neighboring Stevens Creek Quarry to obtain aggregate material from the Permanente Quarry aggregate plant. This area has not been mined. Santa Clara County (County) directed Lehigh to cease using the utility road and amend the approved 2012 reclamation plan to include the utility road disturbance area. Use of the road for transport of mine materials to Stevens Creek Quarry has ceased at this time. The utility road will continue to be used only for intermittent light-duty vehicle access and utility company access (i.e., road use will revert to historical uses).

The existing utility road will be retained following mining operations to provide long-term access by public utilities and Lehigh, as needed. Drainage improvements that convey surface water from the utility road to the existing system of surface water controls at the rock plant area will be maintained. Improvements, monitoring, and maintenance will be consistent with the existing approved storm water pollution prevention plan (SWPPP). Where site-specific reclamation standards apply to the utility access road, they are described in this amendment.

### *Plant Quarry Road*

The County has requested that Lehigh include an approximately 3,600-foot segment of the existing Plant Quarry Road within the amended Reclamation Plan boundaries, and adjacent areas totaling 5.4 acres of existing disturbed area. This road is one of the primary access roads connecting the eastern and western portions of the property. A portion of the segment was constructed in or about 1939 and the entire segment was completed by 1980. Historically, the road has provided general support for cement manufacturing and mining operations on the property. The County requested that Lehigh include this road segment within the reclamation plan boundaries on the basis that the segment is currently used by off-road quarry trucks that circulate between the North Quarry and Rock Plant. These trucks transport aggregate materials from the North Quarry to the Rock Plant on a different road and use the Plant Quarry Road in their return trip to the North Quarry.

This boundary change will not involve reclamation closure requirements. When the road segment is no longer needed to support active mining operations, it will remain in place to provide general site access or to continue serving the cement plant, a separately permitted industrial use that is not subject to the California Surface Mining and Reclamation Act (SMARA).

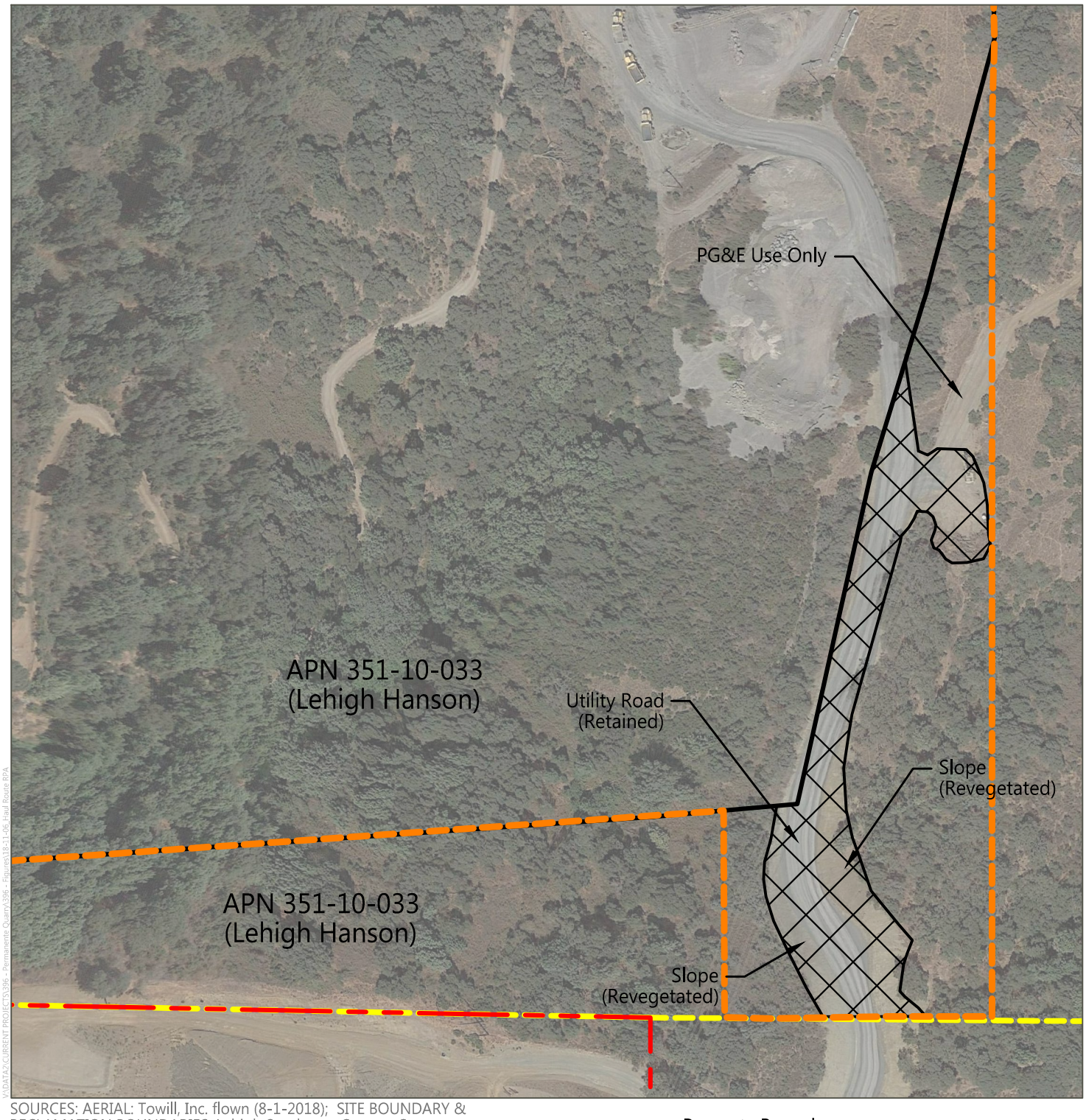
## LOCATION, SIZE, AND LEGAL DESCRIPTION

The Permanente Quarry property includes 3,510 acres and 33 assessor's parcels. Of the total site acreage, 2,656 acres are subject to the County's land use jurisdiction (Santa Clara County 2011). The boundary adjustment for the utility road is with a portion of Assessor's Parcel Number (APN) 351-10-033. The boundary adjustment for the Plant Quarry Road is within portions of APNs 351-10-033, 351-11-001, 351-10-008, and 351-09-022. These parcels are generally located in the southeastern portion of the property, within the County's unincorporated jurisdiction. These parcels are vested.

## VESTED RIGHTS AND APPROVED RECLAMATION PLANS

Permanente Quarry is a "vested" surface mining operation, as determined following a County Board of Supervisors public hearing on February 8, 2011. The vested right, therefore, includes the right to continue surface mining operations within the area determined subject to those vested rights. The boundary modification and utility road are located entirely within the vested rights boundary and do not significantly change on-site activities. Therefore, this reclamation plan boundary does not intensify the existing vested, mining-related operations at the site.

The initial reclamation plan for Permanente Quarry was approved in 1985. It was comprehensively updated in 2012 to comply with all current standards under SMARA. The approved plan provides for a postreclamation land condition suitable for open space uses. This use is consistent with the applicable land-use policies and zoning requirements.




SOURCES: AERIAL: Towill, Inc. flown (8-1-2018); SITE BOUNDARY & RECLAMATION BOUNDARIES: Lehigh Southwest Cement Company, generated Nov. 2018; compiled by Benchmark Resources in 2019

- Property Boundary
- Vested Rights Boundary
- Existing Reclamation Boundary
- Amended Reclamation Boundary (amended area adds an additional 36.6 acres)
- Utility Road Disturbance Area (1.3 acres)

N

0 150 300 600 Feet

**Utility Road Footprint and Boundary Adjustment**

PERMANENTE QUARRY UTILITY ROAD
RECLAMATION PLAN AMENDMENT

**Figure 1**

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SOURCES: AERIAL: Towill, Inc. flown (8-1-2018); SITE BOUNDARY & RECLAMATION BOUNDARIES: Lehigh Southwest Cement Company, generated Nov. 2018; compiled by Benchmark Resources in 2019

Property Boundary

Vested Rights Boundary

Existing Reclamation Boundary

Amended Reclamation Boundary (amended area adds an additional 36.6 acres)

Utility Road Disturbance Area (1.3 acres)

N

0 300 600 1,200 Feet

**Overall Reclamation Plan Amendment Boundary Adjustment**

PERMANENTE QUARRY UTILITY ROAD
RECLAMATION PLAN AMENDMENT

**Figure 2**

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## PLANNING BOUNDARIES

The approved reclamation plan is consistent with current practices and in advance of statutory changes enacted in 2017, identified a “reclamation plan boundary” (Public Resources Code [PRC] § 2772[c][5][B]). The reclamation plan boundary is identified for planning purposes as the intended limits of mining and reclamation at the time of plan approval. Such limits must be periodically revised where additional mining operations are planned, such that reclamation is planned for all mined lands. SMARA defines “mined lands” to include appurtenant roads (PRC § 2729.) Also, SMARA provides that a reclamation plan must identify mine-related access roads and if they will be reclaimed at the end of mining or remain for postmining use (PRC § 2772[c][5][E]). This Minor Amendment implements these requirements by incorporating the existing utility road and Plant Quarry Road into the reclamation plan boundary.

# Memo

| | |
|---|---|
| **To:** | Erika Guerra and Tressa Jackson, Lehigh Southwest Cement Company |
| **From:** | Cindy Davis and Sarah Norris |
| **Date:** | October 12, 2018 |
| **Re:** | Tree Removal Assessment along improved existing access Road for the Lehigh Permanente Quarry |

This memorandum discusses tree removal along the improved existing access road on property owned by Lehigh Southwest Cement Company at the Lehigh Permanente Quarry in unincorporated Santa Clara County, California (**Figure 1**). This memorandum discusses the methodology and results of estimated number of trees and cords of wood removed as a result of improving the existing access road, as requested by Santa Clara County.

Based on geographic information system (GIS), the disturbance associated with the new haul road occurs on lands within unincorporated Santa Clara County (APN: 351-10-033) and within the City of Cupertino (APN 351-10-017) (**Figure 2**). The length of disturbance on property within unincorporated Santa Clara County is approximately 352 linear feet, totaling approximately 0.45 acre. The length of disturbance on property within the City of Cupertino is approximately 536 linear feet, totaling approximately 0.92 acre.

## Methods

GEI Consultants, Inc. (GEI) conducted a field survey on September 27, 2018. The field survey was conducted by International Society of Arboriculture (ISA) certified arborist Sarah A. Norris (WE-7726A) and biologist Brook Constantz along the improved existing access road and vicinity. The entire length of the improved existing access road within the unincorporated area was visually inspected via pedestrian survey, noting dominant tree and shrub species adjacent to the road. Debris piles from tree removal were inspected, but an accurate estimate of trees removed could not be obtained due to the number of small branches, abundance of slash wood, and unsystematic stacking of wood. Representative photos were taken along the length of the road and vicinity (**Attachment A**).

Because an accurate estimate of trees removed could not be obtained by inspection of debris piles, GEI utilized an alternative methodology to quantify the tree removal. Aerial imagery obtained from Google Earth (2018) was reviewed prior to conducting the field survey. Two distinct habitats, woodland and scrubland, were identified from aerial imagery within the study area boundary and verified in the field (**Figure 3**). A total of 1.14 acre of woodland total was removed. GEI established three (3) circular sample plots in woodland habitat adjacent to the improved existing access road to determine representative tree density. Sample plots were 0.1 acre in size, each plot has a radius of 37 feet. Sample plot locations were identified in-field based on accessibility. The steep slopes that characterize the study area prohibited pre-selecting sample plots in advance of the field survey. All sample plot were selected to have an aspect (east-facing slopes) and slope similar to the area that received direct impacts.

Each tree trunk located within the sample plot was measured at diameter breast height (DBH) at 54 inches (or 4.5 feet) above surrounding grade using steel DBH tape obtained from Forestry Suppliers, Inc. Trees below 12 inches DBH were not included in the dataset, since a tree is defined in the Santa Clara County Tree Preservation and Removal Ordinance as having a circumference of 37.7 inches or more, corresponding to 12 inches at DBH. Trunk diameter was rounded to the nearest inch. Forestry tables were used to estimate cord volume per tree based on DBH (University of New Hampshire 2005). A cord of wood corresponds to compact stack of wood filling a volume of 128 cubic feet, corresponding to 4 feet in width, 4 feet in height, and 8 feet in length (4x4x8).

## Results

The raw data collected is provided below in **Table 1**. The number of individual trees sampled per plot varied from 4 to 6. The mean (average) DBH of each sample plot ranged from 16 to 25 inches (**Table 2**), plot 3 was the only sampling plot to have a multi-trunk tree. Sample plots with fewer individual trees tend to have a larger DBH ranges, which translates to a larger canopy that limits light penetration and reduces the number of neighboring trees via increased competition for resources (i.e., sunlight, nutrients, water, etc.).

**Table 1. Sample Plot Data**

| Plot ID | DBH/tree | [a]Cords/tree | Sum DBH/plot | Sum Cords/plot |
|---|---|---|---|---|
| 1 | 16 | 0.5 | 70 | 2.70 |
| 1 | 14 | 0.4 | | |
| 1 | 14 | 0.4 | | |
| 1 | 26 | 1.4 | | |
| 2 | 17 | 0.59 | 98 | 3.37 |
| 2 | 14 | 0.4 | | |
| 2 | 17 | 0.59 | | |
| 2 | 16 | 0.5 | | |
| 2 | 12 | 0.3 | | |
| 2 | 22 | 1 | | |
| 3 | 14 | 0.4 | 76 | 3.09 |
| 3 | 16 | 0.5 | | |
| 3[b] | 22+24 | 1 | | |

Notes:
DBH = diameter at breast height measured from 54 inches above ground surface level
In= inches
[a] Cord estimate based on DBH obtained from Gevorkiantz and Olsen 1955
[b] Plot 3 contained the only multi-trunked tree encountered in the sample universe.
Source: Data compiled by GEI Consultants, Inc. 2018

**Table 2. Statistical Summary of Sample Plots**

| Plot ID | # Individuals | Mean DBH | DBH Range (in) | DBH Total | Calculated Cords per 0.1 acre[a] |
|---|---|---|---|---|---|
| 1 | 4 | 18 | 14-26 | 70 | 2.70 |
| 2 | 6 | 16 | 12-22 | 98 | 3.37 |
| 3 | 4 | 25 | 14-46[b] | 76 | 3.09 |

Notes:
DBH = diameter at breast height measured from 54 inches above ground surface level
In= inches
[a] Cord estimate based on DBH obtained from Gevorkiantz and Olsen 1955
[b] Plot 3 contained the only multi-trunked tree encountered in the sample universe.
Source: Data compiled by GEI Consultants, Inc. 2018

The mean number of trees per 0.1 acre was calculated to be 4.6 trees. The number of cords per 0.1 acre sample plot ranged from 2.7 to 3.4, with a mean of 3.0 cord per 0.1 acre. The number of cords per 0.1 acre sample plot is fairly uniform (standard deviation equal to +/-0.3).

## Conclusions

Woodland habitats are variable based on slope, aspect, elevation, location, and climate. The sample plots established for this study were situated in close proximity to the area of impact, located on a similar slope, aspect, and elevation.

Section C16-6 of Santa Clara County Tree Preservation and Removal Ordinance describes that tree removal may occur on private property in the Hillsides (HS) zoning District. A woodland clearance permit is required when 1) the removal of more than 10 percent of trees per year on any parcel are removed; 2) the cutting of trees for wood in the amount of more than 10 cords per year on any parcel of 100 acres or less; 3) the cutting of trees for wood in the amount of more than 25 cords per year on any parcel larger than 100 acres.

Based on the sample data, it is estimated that 4.6 trees, or 3.0 cords per 0.1 acre of woodland were removed. A total of 0.45 acre of tree removal occurred in woodlands within unincorporated Santa Clara County. It is estimated that approximately 21 trees were removed, corresponding to approximately 13.7 cords of wood removed on lands within unincorporated Santa Clara County. Tree removal occurred on a parcel 159.4 acres in size within unincorporated Santa Clara County and therefore tree removal occurred on approximately 0.2 percent of the parcel. The tree removal impact is below the threshold of the county ordinance requiring that a woodland clearance permit be obtained if 10 percent of the woodland acreage of a parcel would be removed or more than 25 cords of wood removed.

Within the City of Cupertino, it is estimated that approximately 35 trees were removed, corresponding to approximately 22.6 cords of wood. Tree removal occurred on a parcel 40 acres in size within the City of Cupertino and therefore tree removal occurred on approximately 1.85 percent of the parcel.

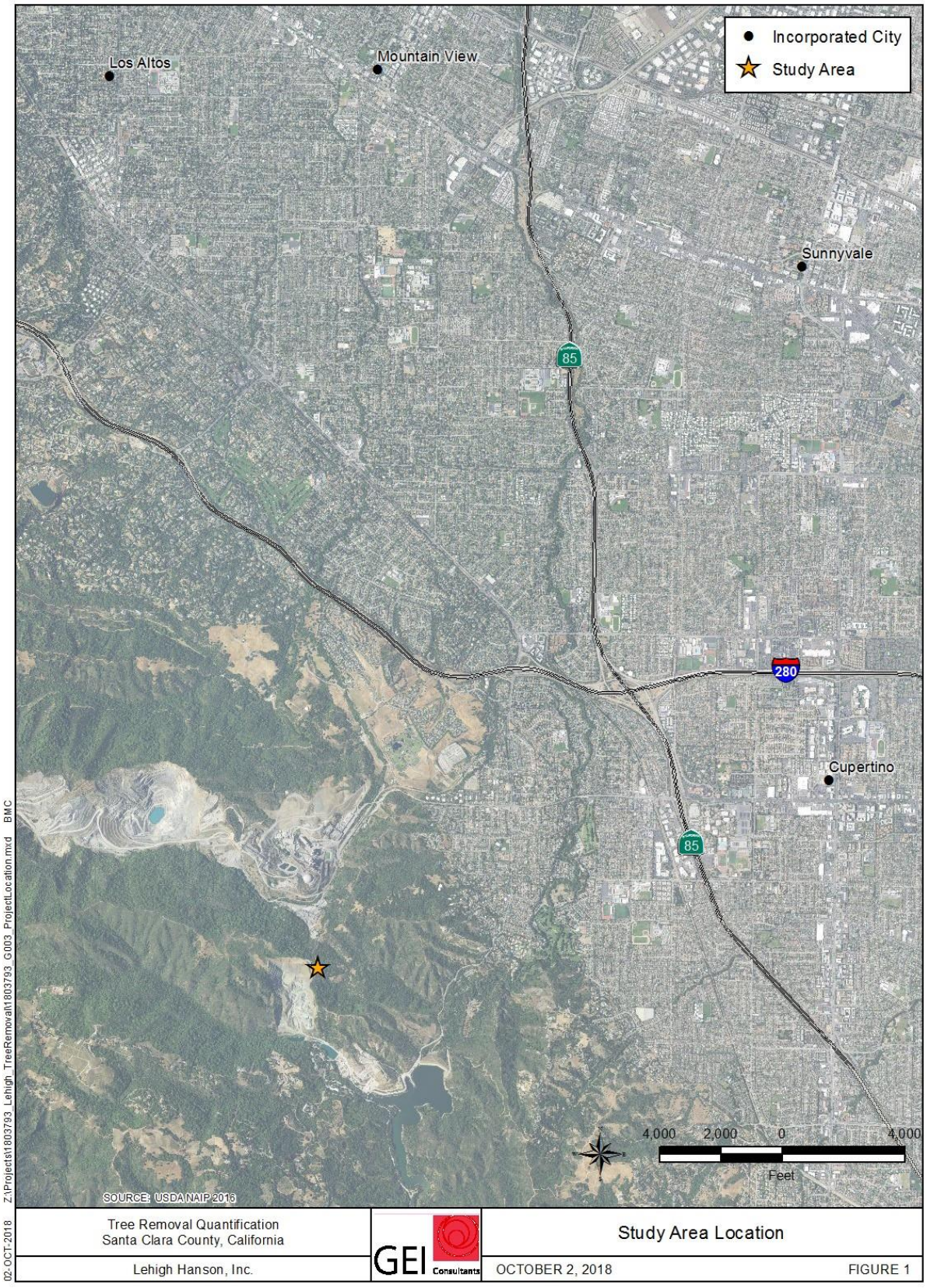
## References

Gevorkiantz, S.R., and L.P. Olsen. 1955. *Composite Volume Tables for Timber and Their Application in the Lake States*. Technical Bulletin No. 1104. Lake States Forest Experiment Station Forest Service. U.S. Department of Agriculture. Washington, D.C.

Google Earth. 37.307714° N, -122.090334°W. Image date May 9, 2018; Image date September 1, 2018. Accessed September 26, 2018.

University of New Hampshire. 2005. *Estimating Firewood from Standing Trees*. University of New Hampshire Cooperative Extension.

**Figure 1. Study Area Location**

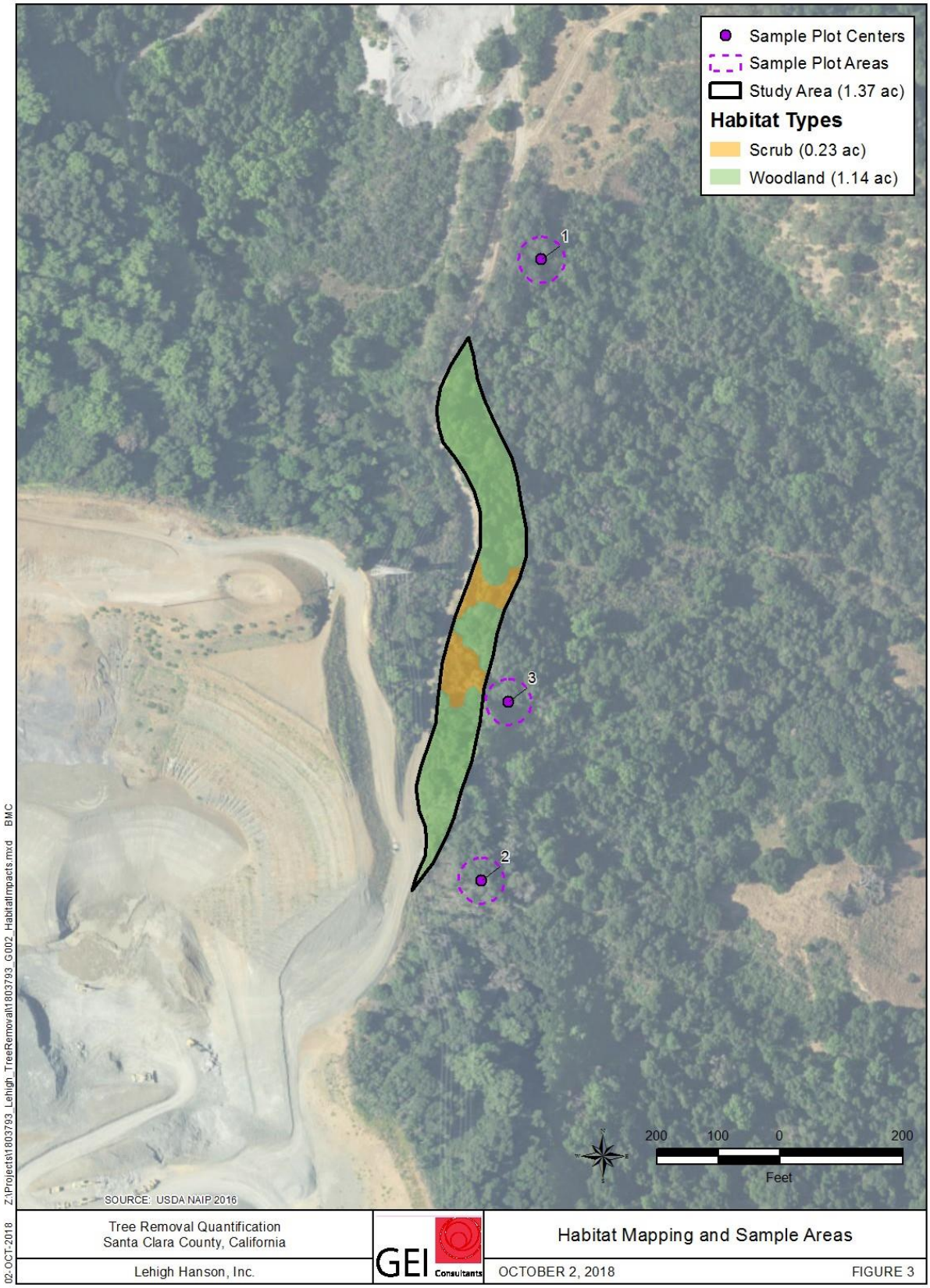



Source: GEI Consultants, Inc., 2018

**Figure 2. Unincorporated Santa Clara County Jurisdiction**


Source: GEI Consultants, Inc., 2018

**Figure 3. Habitat Map and Sample Areas in Unincorporated Area**




Source: GEI Consultants, Inc., 2018

Stantec

| | | | |
|---|---|---|---|
| To: | Talia Flagan | From: | Paul Kos |
| | Lehigh Hanson | | Denver, Colorado Office |
| File: | Lehigh Utility Road Geotech Review<br>Stantec PN 233001289 | Date: | May 21, 2019 |

# Utility Road Grading Plan and Geotechnical Analysis

## BACKGROUND

Lehigh Hanson (Lehigh) improved an approximately 800-foot long portion of an existing utility road that climbs southerly from the Permanente aggregate plant and continues along a ridge toward the neighboring quarry site (**Figure 1**). The alignment has been in use for 50 plus years and does not represent an engineered design. This roadway began as a narrow, bulldozed exploration and utility access road. It was subsequently used as a maintenance road to access this portion of the property, and by Pacific Gas and Electric Company (PG&E) to access power lines in the area. The road was improved in 2018 to allow for off-site materials transport. Lehigh plans to grade the utility road to decrease slope gradients while continuing to allow access by site personnel for maintenance and exploration purposes, PG&E maintenance vehicles, and potentially emergency response vehicles. No further hauling is planned for the road.


**Figure 1 Utility Road Location**

## EXISTING CONDITIONS

The utility road was improved along its preexisting alignment. While the road contains steep slopes and grades, it is within typical mining industry standards for grading, slopes, and drainage controls. A key consideration of this road is that it is an internal road that cannot be accessed by the public. It must remain serviceable as it serves the primary access to the southern property and as an easement for PG&E utility lines. Roads such as this are typically constructed following existing site practices that have been proven to work at the site. Photographs of the improved road are included below. **Figure 2** shows the road cross-section and presents the range of excavation heights. **Figure 3** shows the fill profile. It should be noted that the slopes pictured have been revegetated since these photographs were taken.

**Figure 2 Utility Road Cross-Section**

**Figure 3 Utility Road Fill Profile**

The road is steep compared to typical public roads, with grades up to 20%. These grades are common for unpaved mine access roads which are not intended for public use. These grades are also consistent with the grades for retained roads in the currently approved Reclamation Plan Amendment for the Permanente Quarry. The road is sloped toward the hillside, which directs stormwater to the inside of the road. Water flows either to the aggregate plant at Permanente Quarry to the north or Stevens Creek Quarry to the south, where it enters one of the existing stormwater management systems.

The utility road was constructed by placing a key at the toe of the fill slope. The key included excavating material from the toe of the fill area and backfilling it with compacted fill. Water was added to the fill to achieve optimal moisture content, and it was compacted with a vibratory sheep's foot roller. Once the key was constructed, the utility road was improved by cutting material from the uphill slope and placing compacted fill on the downhill slope above the key. The fill slope was cleared and grubbed, but the surface soil was not removed, except where the key was placed. The cut slopes vary, but they are generally steep at approximately 1:1 (45°), with cut heights are up to 30 feet. The fill slopes are also steep at approximately 1.2:1 (39°), with fill slopes up to 50 feet high. Internal mine roads are often constructed with cut and fill slopes in this range, and any erosion that occurs is managed by the site maintenance crews. A safety berm was

constructed on the outside edge of the utility road, consistent with Mine Safety and Health Administration (MSHA) requirements and standard safety practices, which improves the safety of maintenance or utility worker use. This configuration consisting of a berm on the outside and a ditch on the inside is a preferred design for site roads, because it limits the potential for discharges to the environment.

A Stantec Certified Engineering Geologist (CEG) inspected the utility road in May 2019 to evaluate the lithology along the road cut. The inspection confirmed the road was constructed primarily in the Santa Clara Formation; however, the southern section (including C-C') was constructed in Franciscan Limestone and Greenstone. The limestone is not present at the two areas where a geotechnical assessment is required (see below). **Figures 4** and **5** show the Santa Clara Formation at the road cut at cross-section B-B' and Greenstone at the road cut at cross-section C-C', respectively. **Drawing 1** includes the cross-section locations, and the cross-sections are included as **Drawing 2**.

**Figure 4 Road Cut at Cross-Section B-B'**

**Figure 5 Road Cut at Cross-Section C-C'**

## SURVEY DATA

Lehigh provided Stantec with survey data from before and after the road improvements. The pre-construction survey was performed in April 2007, and the existing conditions survey was performed in September 2018. These surfaces were used to create the grading plan and to create the cross-sections used to analyze the slope stability. Stantec believes the April 2007 survey was impacted by dense vegetation in the vicinity of the utility road, and the survey appears to present the top of vegetation in several areas rather than the ground surface. To compensate for these differences in elevation, Stantec adjusted the original ground topography in the cross-sections based on known facts. These include the extents of cutting and filling from the road improvement – the 2007 topography and 2018 topography should match outside this area. Also, aerial photographs available from Google Earth were used to determine the distances from the original road, key road, and current road edges and centerlines to confirm extents of disturbances. The 2007 topography, while showing the top of vegetation, likely represents the original slope, and the surface was lowered to match the extents of disturbance.

## PROPOSED GRADING

Stantec recommends grading the road to reduce fill slope gradients to comply with local rules and regulations. City and County grading regulations require slope gradients be 2h:1v, or the design be certified by a Certified Engineering Geologist. The grading design is based on a minimum 20-foot road width, which includes sufficient space for one-way travel, a ditch, and a berm. Road widths for retained roads, in the currently approved Reclamation Plan Amendment for the Permanente Quarry, vary and are as narrow as 12 feet. Wherever practical, the road will be wider than 20 feet to provide turn-off locations. The grading plan has an overall road gradient of approximately 12%, with short sections that exceed 20% gradient. These grades are consistent with the original utility road and other roads that will be retained during reclamation per the currently approved Reclamation Plan Amendment for the Permanente Quarry.

The road can be graded to 2h:1v slopes the entire length of the road, except for two areas as shown on **Drawing 1**. Both sections where steeper slopes are required are approximately 100 feet long. The grading for both areas includes narrowing the road width to 16 feet and increasing the slope gradient to the necessary slope that does not increase the disturbance area beyond the existing area. Narrowing the road to 16 feet allows the slope gradient to be decreased closer to the 2h:1v target, while maintaining sufficient road width for the potential traffic. The northern section requires a maximum gradient of 1.70h:1v, and the southern section requires a maximum gradient of 1.76h:1v. These gradients follow the pre-construction topography; therefore, the entire length of road will be graded to 2h:1v slopes or to pre-construction topography. This grading requires excavating and hauling away approximately 9,000 cubic yards of material. The material will be placed on the Permanente Quarry property in accordance with the current Reclamation Plan.

Cross-sections of the proposed utility road through a typical 2h:1v slope and the two areas requiring slope gradients steeper than 2h:1v are included as **Drawing 2**. These figures present the original topography based on the 2007 pre-improvement survey, current topography based on the September 2018 survey, and the design topography.

## SLOPE STABILITY DISCUSSION

Lehigh is required to submit slope stability calculations pursuant to California Code of Regulations, Title 14, § 3704(f). This regulation applies to final cut slopes and requires a slope stability factor of safety suitable with the proposed end land use. As discussed above, the utility road will be retained following mine reclamation for internal site access, PG&E access, and emergency vehicle use. The road will not be open for public use.

## SLOPE STABILITY EVALUATION

Stantec performed a geotechnical evaluation of the slope stability for the two sections where fill slopes must be steeper than 2h:1v. Stantec evaluated both the cut and fill slopes. The slope stability analyses were modeled using the software Slope-W® 2018 R2 version 9.1 by GeoStudio, released in 2018. The software used limit equilibrium on slices of potential failure surface to calculate factor of safety (FoS). The models are evaluated under static and pseudo-static conditions, with horizontal ground acceleration, using the Spencer method. The minimum acceptable factors of safety for the analyses are 1.3 for static conditions, and 1.0 for pseudo-static conditions based on mining industry standards. For the pseudo-static model conditions, a horizontal seismic coefficient of 0.15 times the force of gravity (g) was applied to the static condition models to

be consistent with previous studies (Golder 2011) and to follow recommendations for earthquakes with magnitudes up to 8-1/4 (Seed 1982).

Site-specific geotechnical information on the backfill materials is available for the overburden fill, bedrock, and native soils. Strength parameters for the material have been established in previous geotechnical analyses of the Lehigh property and are based on laboratory testing, back-calculation, and published values for material properties (Golder 2011). These strength parameters are listed in **Table 1** below.

The fill material rock strength is consistent with the material strength parameters used for waste rock fill slope assessments at the Lehigh property (Golder 2011). Stantec feels the shear strength values are representative of the materials used for the fill, albeit conservative due to no consideration for cohesion, considering the existing fill slopes were placed at a gradient of approximately 39 degrees.

There is a thin layer of residual soil between the bedrock and fill material, and Stantec used material strength parameters for soils that are based on laboratory testing results and published strength values for Sandy Clay/Clayey Sand/Clayey Gravel/Silty Sand material. The laboratory results included values for cohesion; however, the stability analysis assumed a cohesionless material to be conservative. These strength values are representative of native soils above the Santa Clara Formation and have previously been used for slope assessments at the Lehigh property (Golder 2011).

The Santa Clara Formation is present in the road cut at cross-sections A-A' and B-B' and occurs as both fine- and coarse-grained materials. The fine-grained material at cross-section A-A' is primarily a medium to high plasticity clay with gravel, sand, and some silt. The coarse-grained material at cross-section B-B' is a well-graded gravel with clay and sand, with fine to coarse, rounded to sub-rounded gravels. Strength values for the Santa Clara Formation are provide by California Geological Survey for the Cupertino 7.5-minute Quadrangle (CGS 2002). Values for both "favorable bedding conditions" (coarse-grained) and "adverse bedding conditions" (fine -grained) were used in the stability analysis considering both are present in the project area. The unit weight for the Santa Clara Formation was assumed to be the same as the Greenstone and Limestone bedrock.

Weathered Greenstone and Limestone are present along the road cut at cross-section C-C'. Site specific geotechnical information is available for the Greenstone and Limestone rock types, and strength parameters for the material have been established in previous geotechnical analyses (Golder 2011 and Stantec 2019). These strength parameters are based on laboratory testing, back-calculation, rock mass rating (RMR) calculations, and back-analysis of landslide areas. The strength parameters, from RMR classification, were provided to estimate Mohr-Coulomb strength parameters. RocLab (1.0) free software from Roc Science were used to do the calculation. The calculations were based "General" application for failure envelope range. The disturbance factor of D = 0 was used.

## Table 1 Shear Strength Values

| Material | Unit Weight (pcf) | Friction Angle (degrees) | Cohesion (psf) |
|---|---|---|---|
| Soil | 120 | 30 | 200 |
| Fill | 125 | 35 | 0 |
| Santa Clara (favorable bedding conditions) | 165 | 33 | 550 |
| Santa Clara (adverse bedding conditions) | 165 | 24 | 820 |
| Greenstone | 165 | 23 | 1,400 |
| Limestone | 165 | 30 | 12,500 |

Stantec modeled the slope stability factors of safety for static and pseudo-static conditions using Slope/W 2012 (Version 8.14) software. Slope/W performs a two-dimensional, limit-equilibrium analysis to calculate the factor of safety. The pseudo-static analysis used a seismic coefficient of 0.15, which is consistent with previous analyses at the Lehigh property (Golder 2011).

The slope stability results identify the minimum factors of safety for each analysis, and these results are summarized in **Table 2** below and the model reports are included in **Attachment 1**. The results indicate that the cut and fill slopes are stable (FOS>1.0) during both the static and pseudo-static conditions. There is no infrastructure or any sort of facility below the road that can be impacted by potential slope movements. Stantec recognizes that the location of the pre-construction topography is approximate, and a sensitivity analysis was performed to assess the fill slope stability if the entire road bench is fill material. This sensitivity demonstrates that the slope is stable in this unlikely scenario. Stantec also recognizes that the strength of the Santa Clara Formation may not be uniform along the road cut, and a sensitivity analysis was performed using published strengths for fine-grained sections of the formation with “adverse bedding conditions” (CGS 2002). The sensitivity also demonstrates that the slope is stable if there is fine-grained Santa Clara Formation present; see **Attachment 1**.

## Table 2 Slope Stability Results

| Section | Slope | Static FOS | Pseudo-Static FOS |
|---|---|---|---|
| A-A’ | Cut Slope (coarse-grained) | 1.88 | 1.46 |
| | Cut Slope (fine-grained) | 1.87 | 1.41 |
| | Fill Slope | 2.06 | 1.52 |
| B-B’ | Cut Slope (coarse-grained) | 1.87 | 1.45 |
| | Cut Slope (fine-grained) | 1.88 | 1.45 |
| | Fill Slope | 1.93 | 1.52 |
| C-C’ | Cut Slope | 2.86 | 2.44 |
| | Fill Slope | 2.67 | 1.94 |

## Recommendations for Future Actions

Stantec recommends several actions to improve the functionality of the road and minimize erosion and maintenance requirements. Foremost, the slopes should continue to be seeded to establish vegetation, which will reduce erosion. Similar to what was completed in 2018, the seeding should occur before each rainy season, as necessary.

Stantec also recommends maintaining the road and repairing any areas where erosion may occur.

## Closure

This report has been prepared for Lehigh Hanson to provide a geotechnical evaluation of proposed grading activities to further improve to the existing utility road based on site observations and provided data. As mutual protection to Lehigh, the public, and Stantec, this memorandum and its figures are submitted for exclusive use by Lehigh Hanson. We specifically disclaim any responsibility for losses or damages incurred through the use of our work for a purpose other than as described in this memorandum. Our memorandum and recommendations should not be reproduced, except in whole, without our express written permission.

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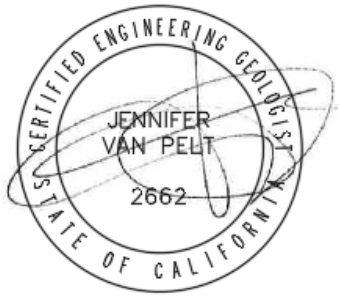


Attachments:

Drawing 1 Utility Road Grading Plan
Drawing 2 Utility Road Cross-Sections
Slope Stability Analysis Results

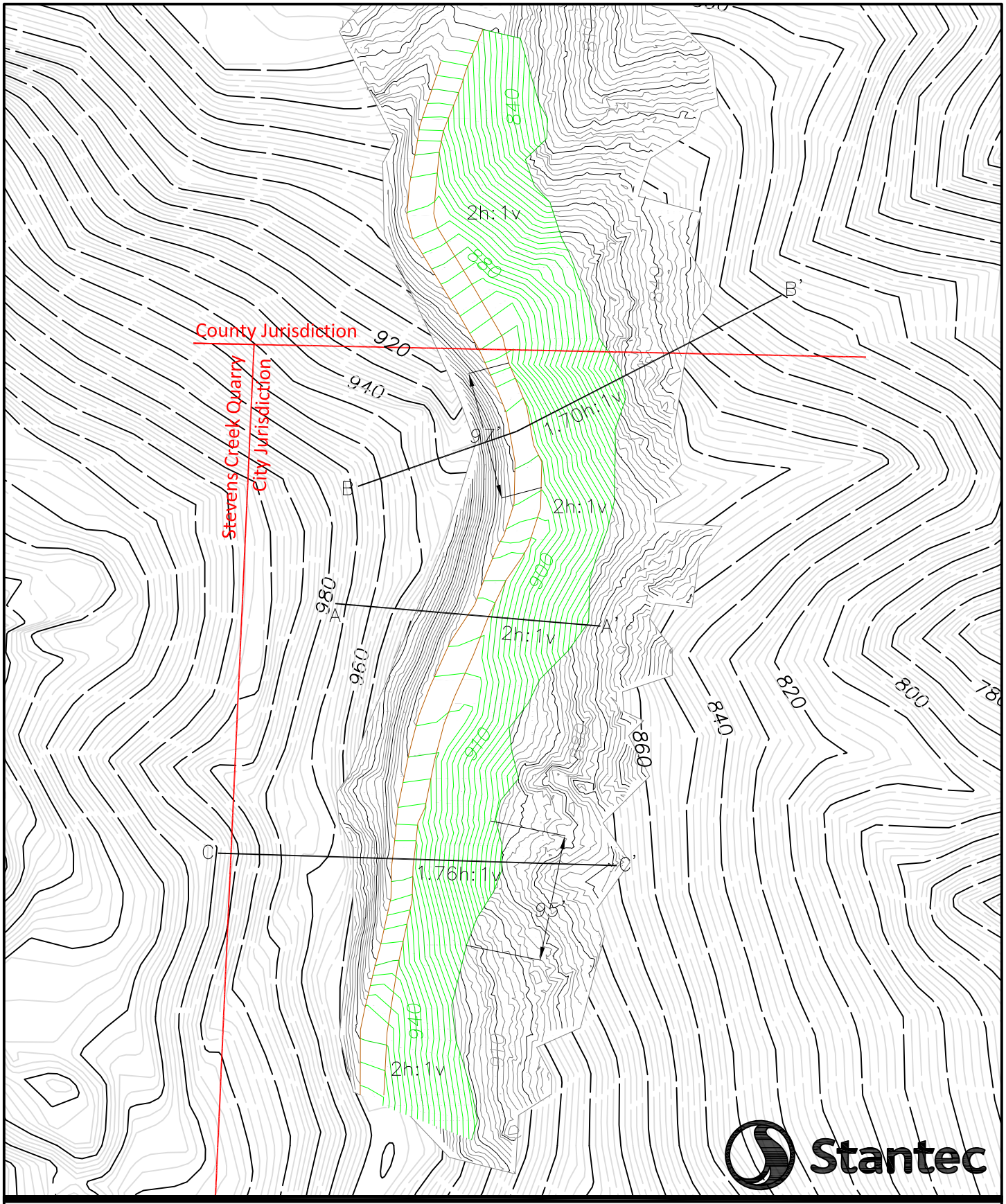
References:

CGS, 2002. Seismic Hazard Zone Report for the Cupertino 7.5-Minute Quadrangle, Santa Clara County, California. Seismic Hazard Zone Report 068. Department of Conservation, California Geological Survey. 2002.

Golder, 2011. Geotechnical Evaluations and Design Recommendations (Revised), Permanente Quarry Reclamation Plan Update, Santa Clara County, California, Revision 1.1_12-7-11. November 2011.

Seed, H. B., 1979. "Considerations in the Earthquake-Resistant Design of Earth and Rockfill Dams," Geotechnique, vol. 29, No. 3, pp. 215-263.

Stantec, 2019. North Highwall Reserve Geotechnical Evaluation, Permanente Quarry. Prepared for Lehigh Southwest Cement. April 5, 2019.




Legend

- 2007 Topography
- 2018 Topography
- Proposed Topography
- Proposed Utility Road
- Property Boundary
- Extent of Fill
- Cross-Section

N

0 100' 200'

Client/Project

Lehigh Southwest Cement Company
Permanente Quarry

Drawing

1

Title

Utility Road Grading Plan

Stantec

v:\2274\active\233001289\lehigh_s_437\437-3_223001328_permanentseesaw\disc\geotech\scq road\response to city_may2019\scq road grading plan_20may2019

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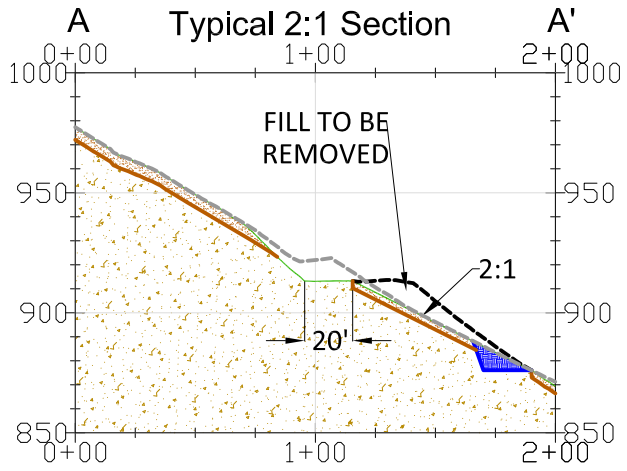


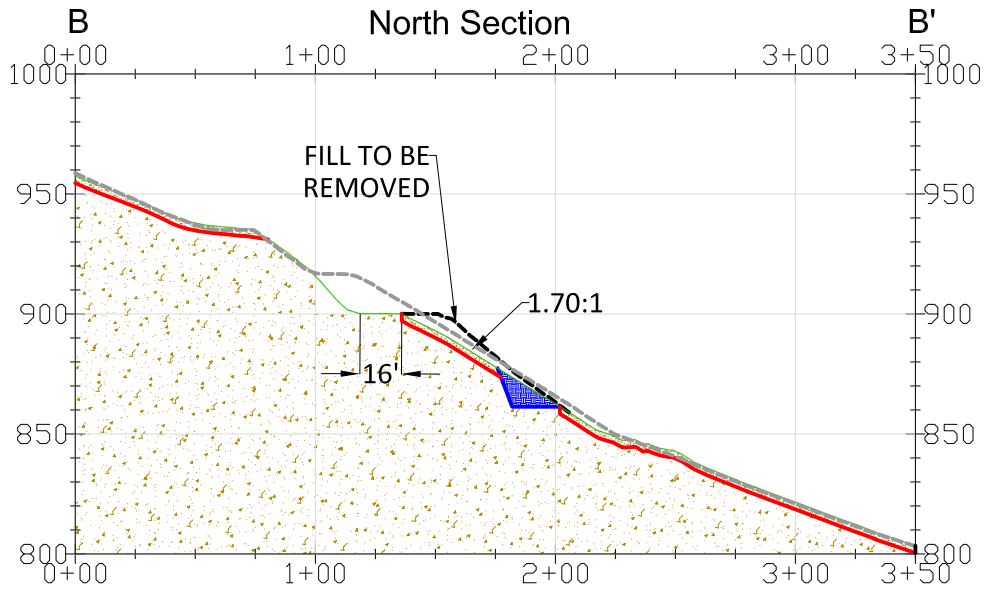


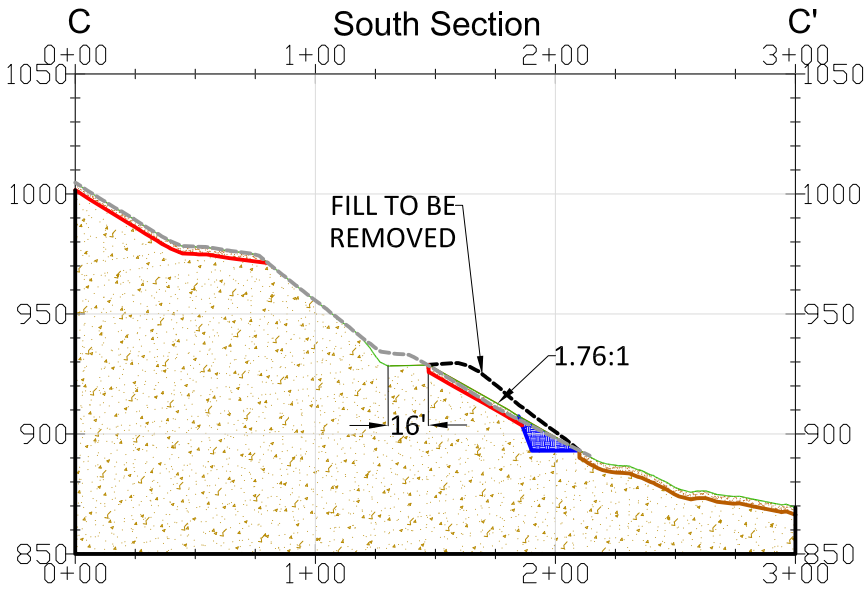


Stantec

Legend

- PROPOSED SURFACE
- EXISTING SURFACE
- ORIGINAL SURFACE
- COMPACTED KEY
- SOIL LAYER

0 80' 160'

Client/Project
Lehigh Southwest Cement Company
Permanente Quarry

Drawing
2

Title
Utility Road Cross-Sections

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# Attachment 1

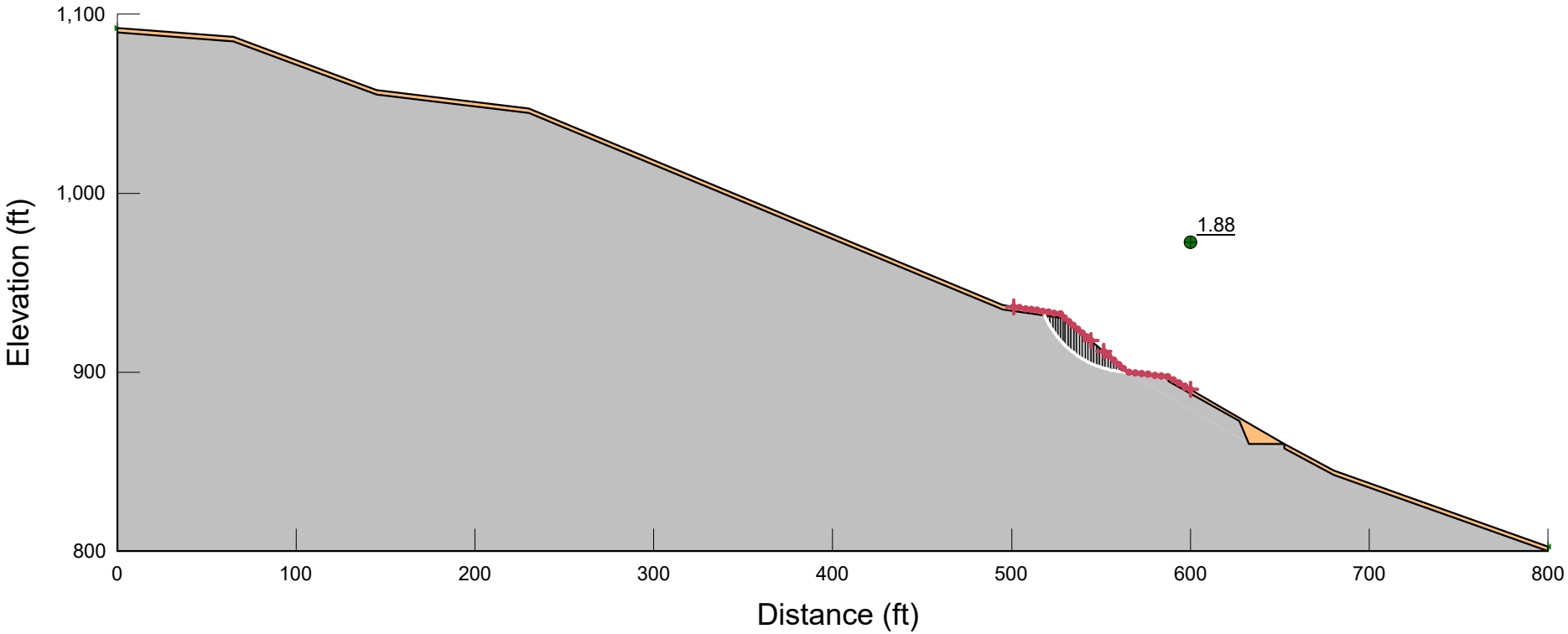
# Slope Stability Analysis Results

Title: Stevens Creek Road (Section A)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 1. Cut Slope (Local)
Name: 1a. Static Analysis

Factor of Safety: 1.88

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

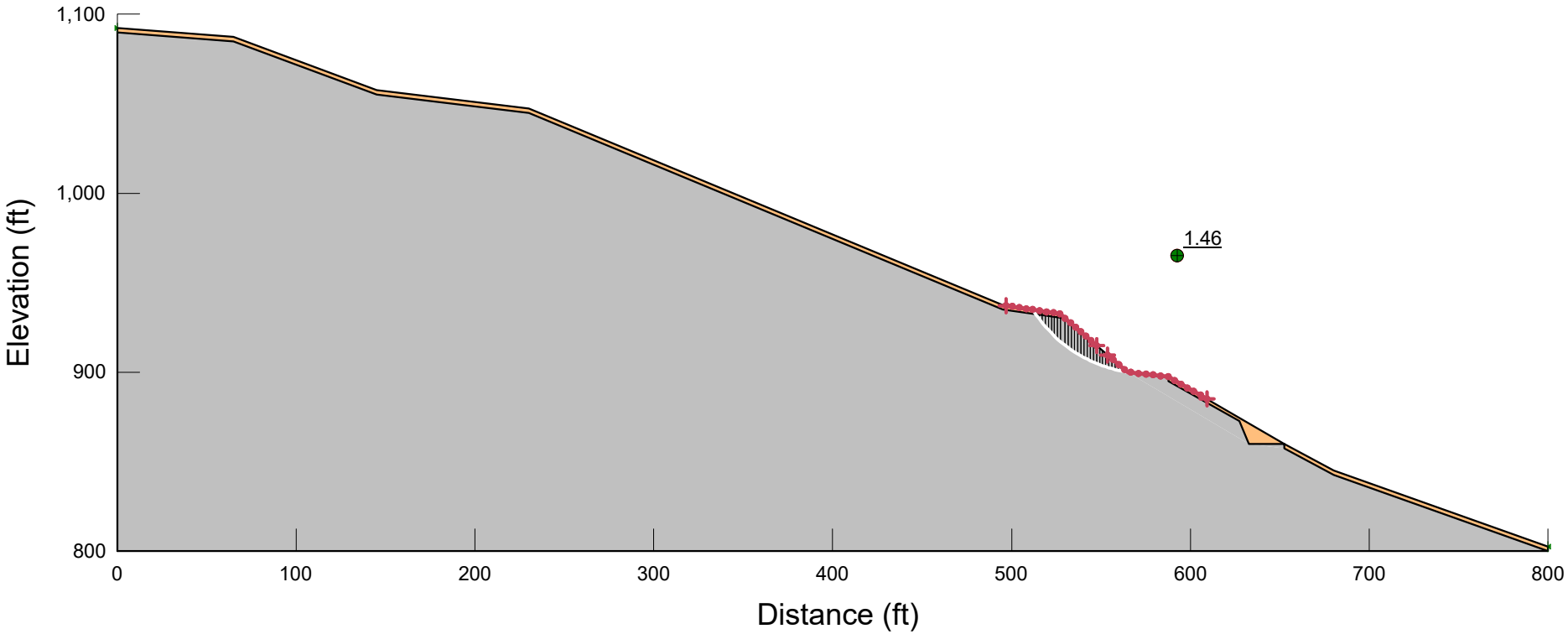


Title: Stevens Creek Road (Section A)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 1. Cut Slope (Local)
Name: 1b. Pseudostatic Analysis

Factor of Safety: 1.46

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

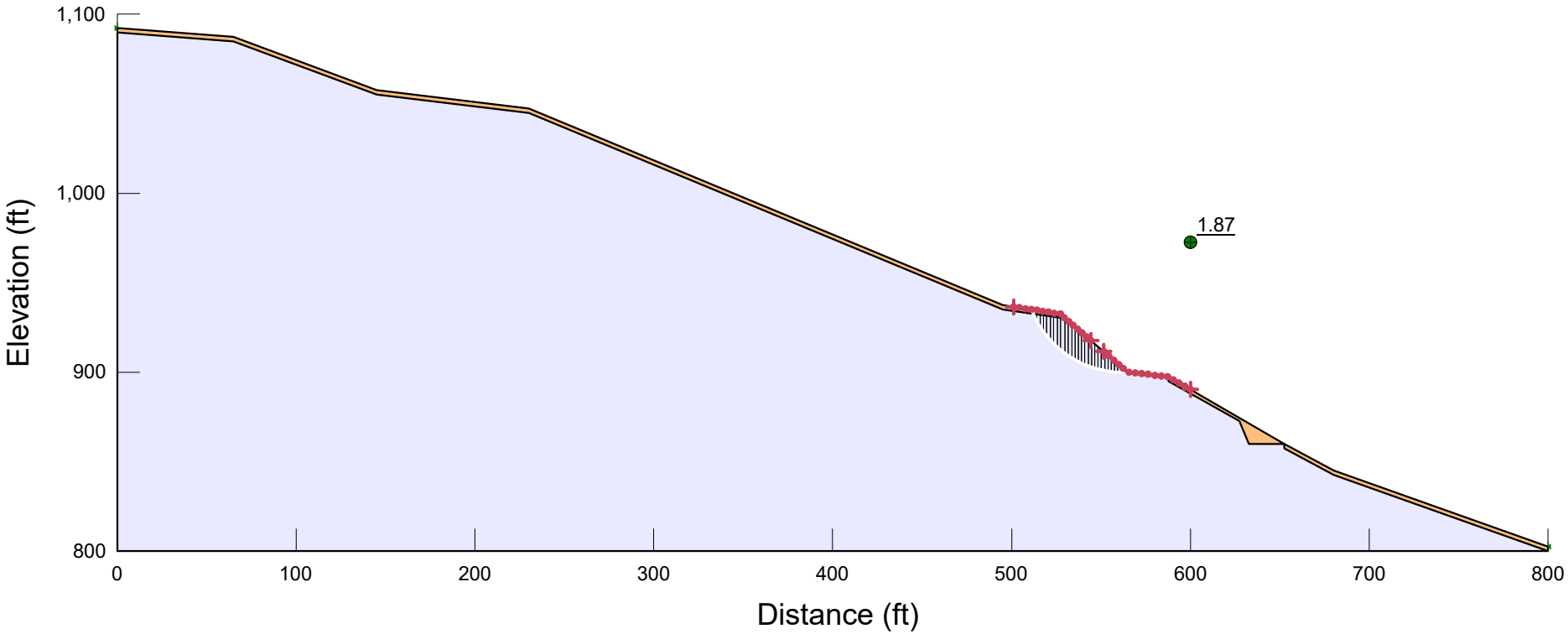


Title: Stevens Creek Road (Section A)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 1. Cut Slope (Local)
Name: 1c. Static Analysis (Sensitivity)

Factor of Safety: 1.87

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara (Sensitivity) | Mohr-Coulomb | 165 | 820 | 24 |

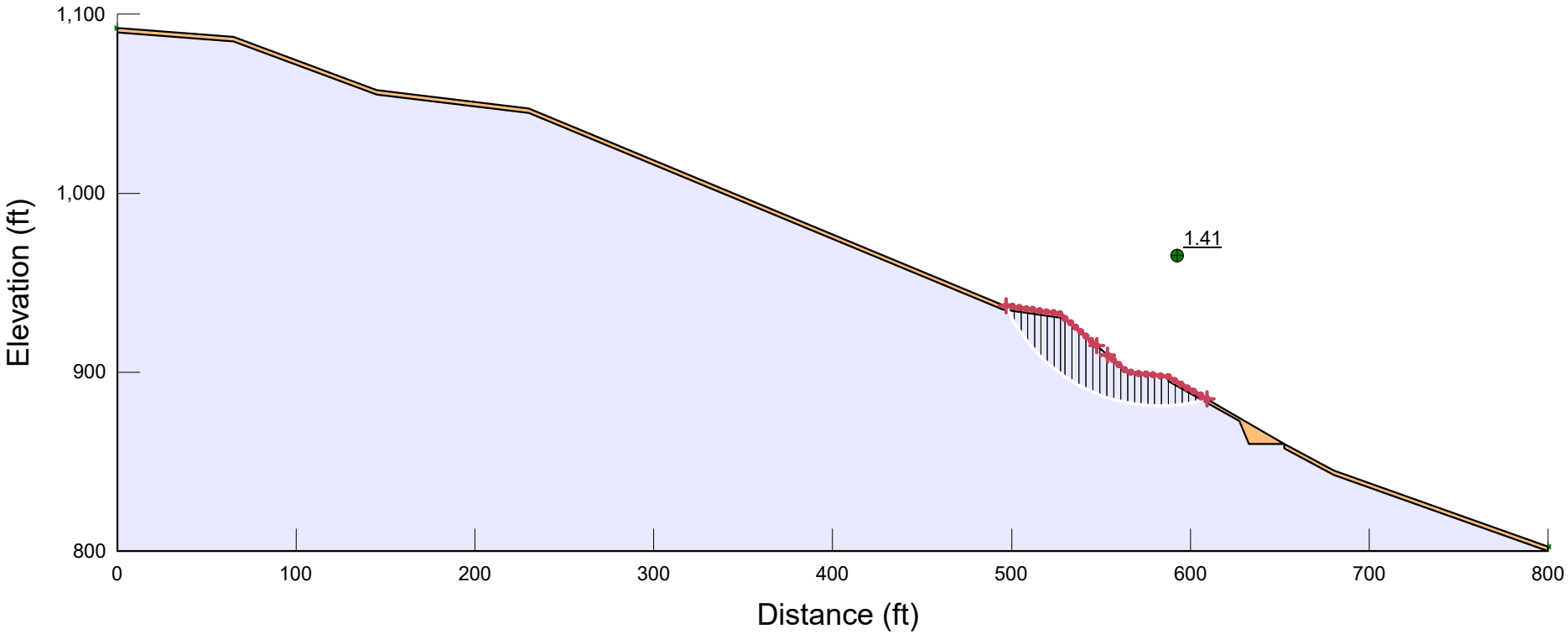


Title: Stevens Creek Road (Section A)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 1. Cut Slope (Local)
Name: 1d. Pseudostatic Analysis (Sensitivity)

Factor of Safety: 1.41

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara (Sensitivity) | Mohr-Coulomb | 165 | 820 | 24 |



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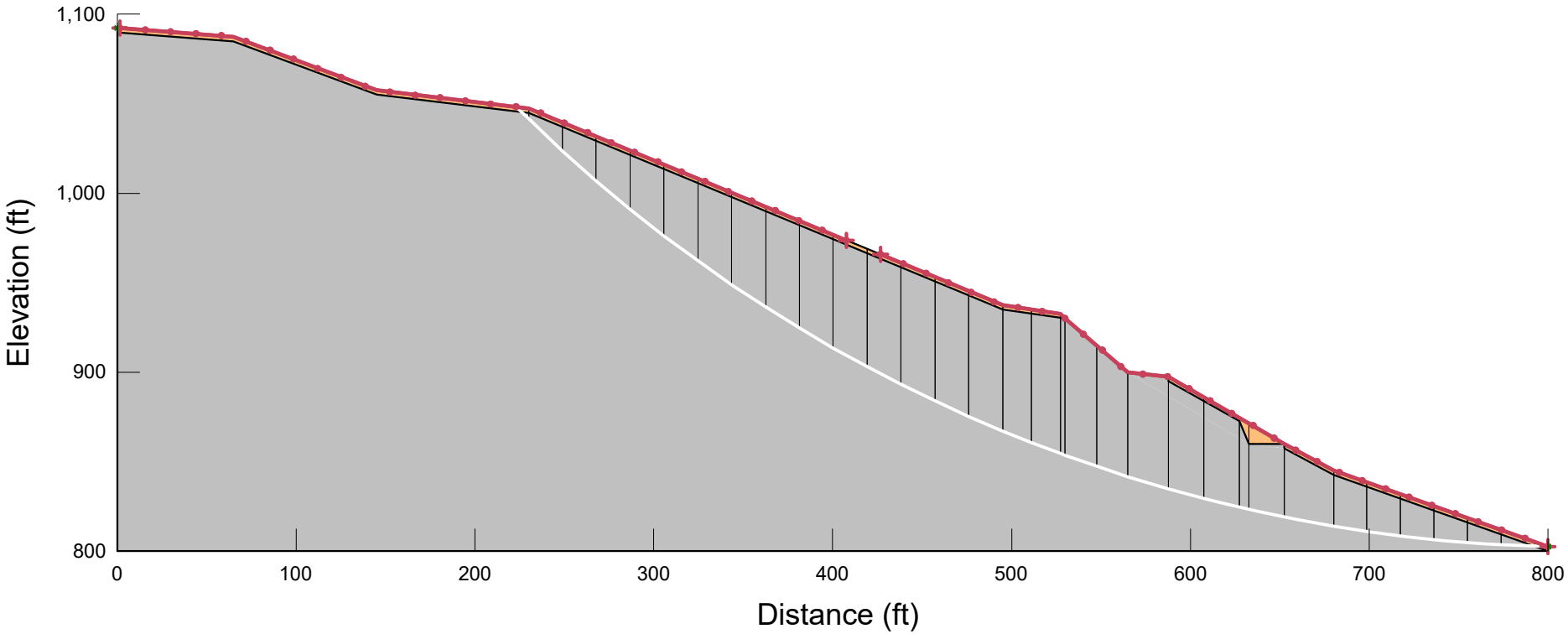
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 2. Cut Slope (Global)
Name: 2a. Static Analysis

Factor of Safety: 1.78

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

1.78

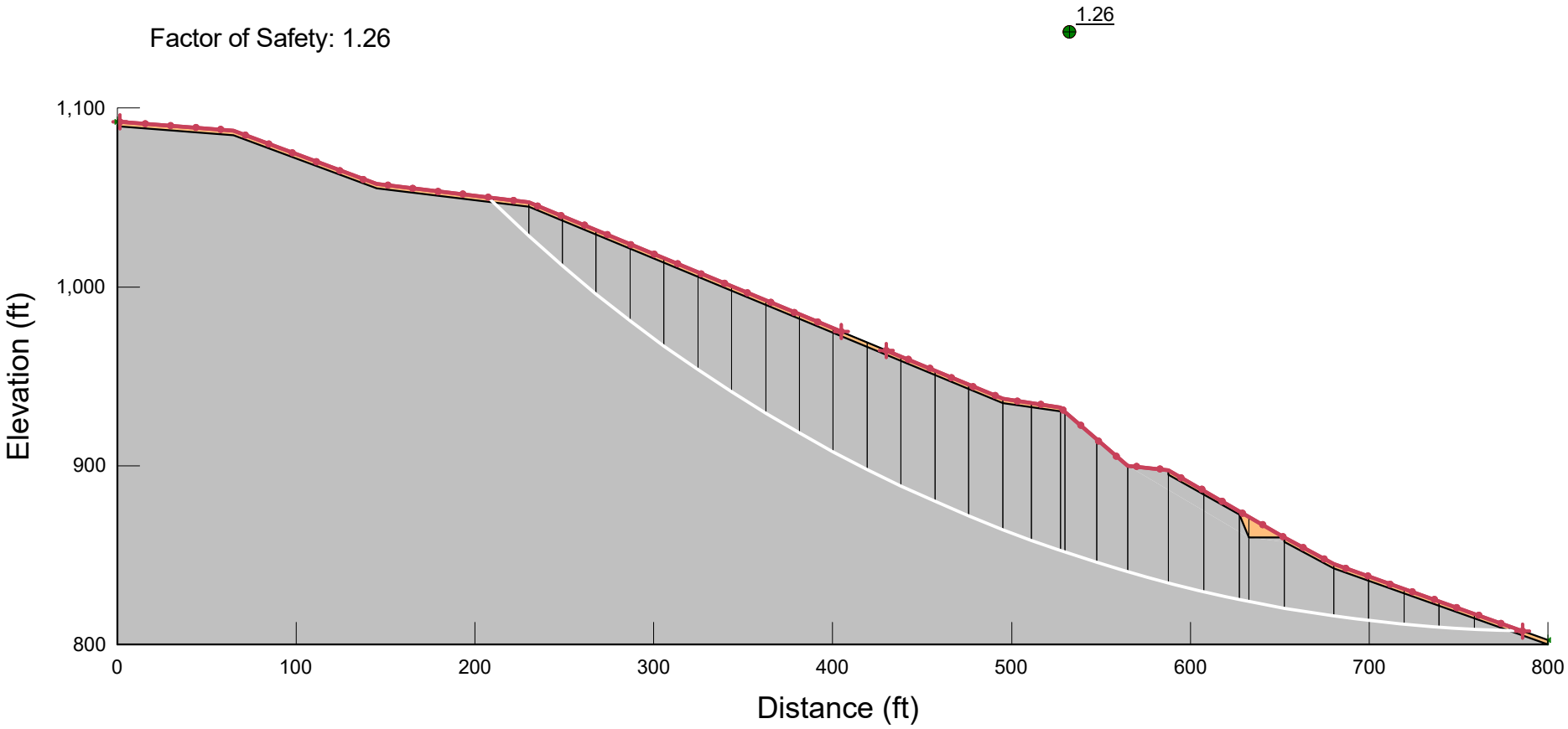


Title: Stevens Creek Road (Section A)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 2. Cut Slope (Global)
Name: 2b. Pseudostatic Analysis

Factor of Safety: 1.26

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

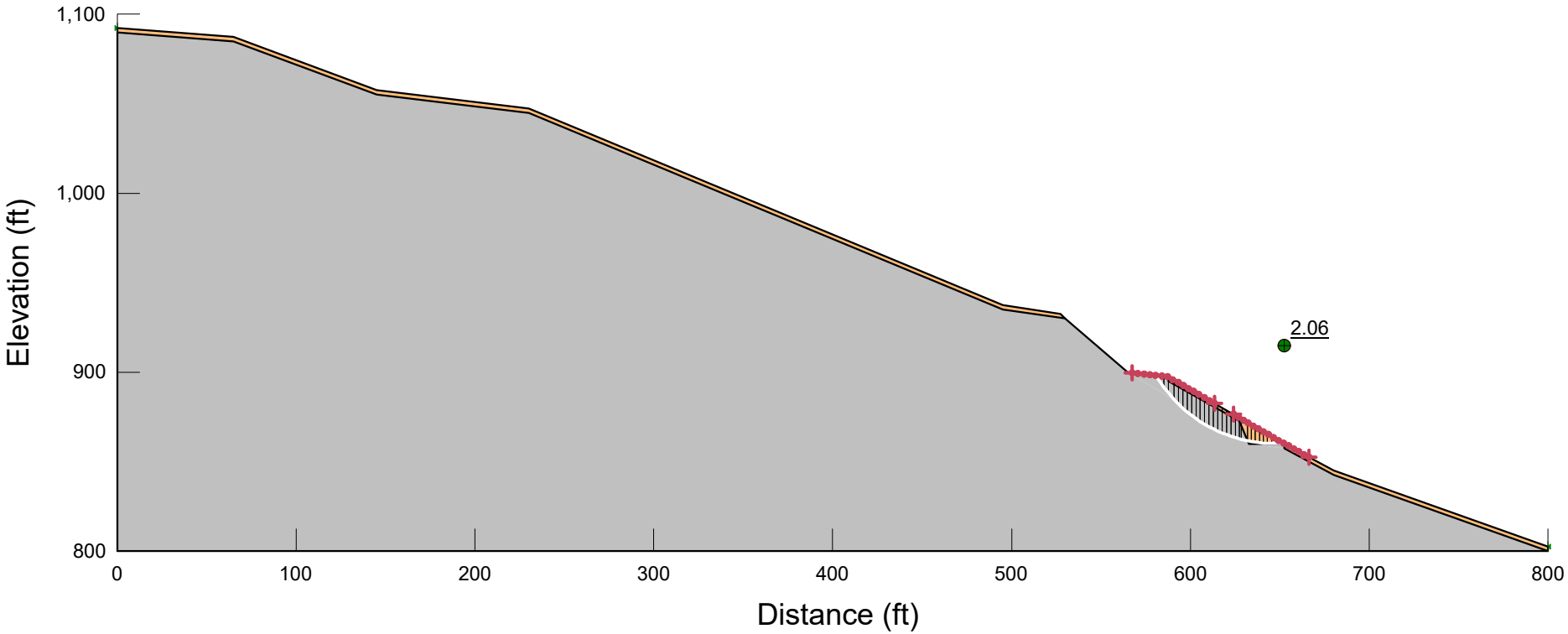


Title: Stevens Creek Road (Section A)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 3. Fill Slope
Name: 3a. Static Analysis

Factor of Safety: 2.06

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |



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Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 3. Fill Slope
Name: 3b. Pseudostatic Analysis

Factor of Safety: 1.52

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
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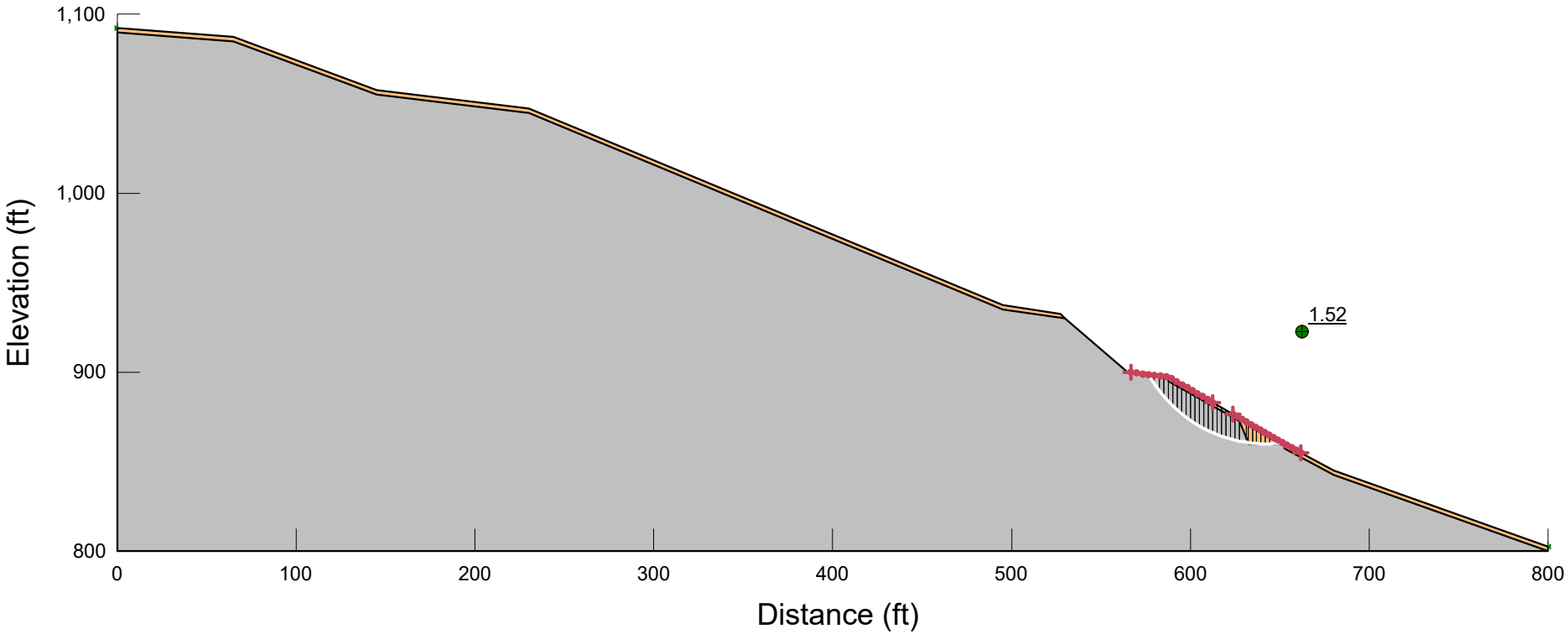
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |



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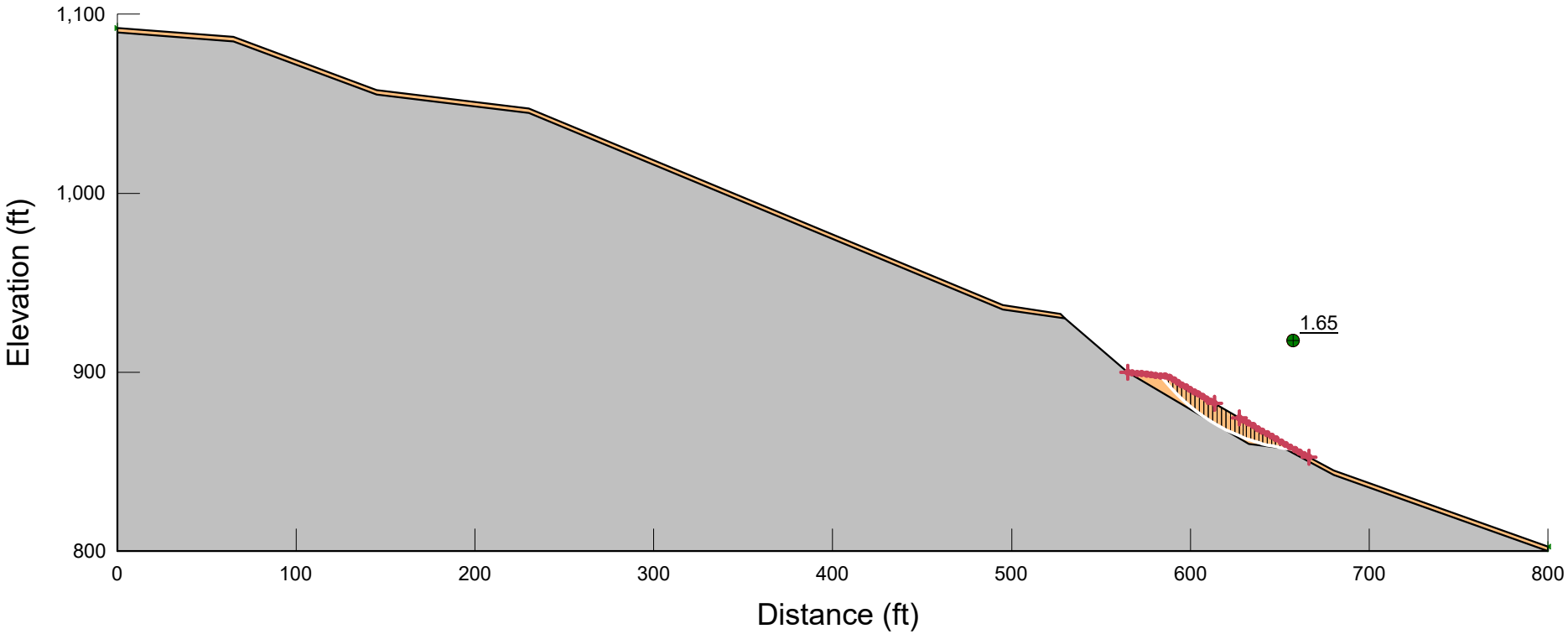
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 4. Fill Slope (Sensitivity)
Name: 4a. Static Analysis

Factor of Safety: 1.65

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |



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Date: 05/20/2019
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Parent: 4. Fill Slope (Sensitivity)
Name: 4b. Pseudostatic Analysis

Factor of Safety: 1.25

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
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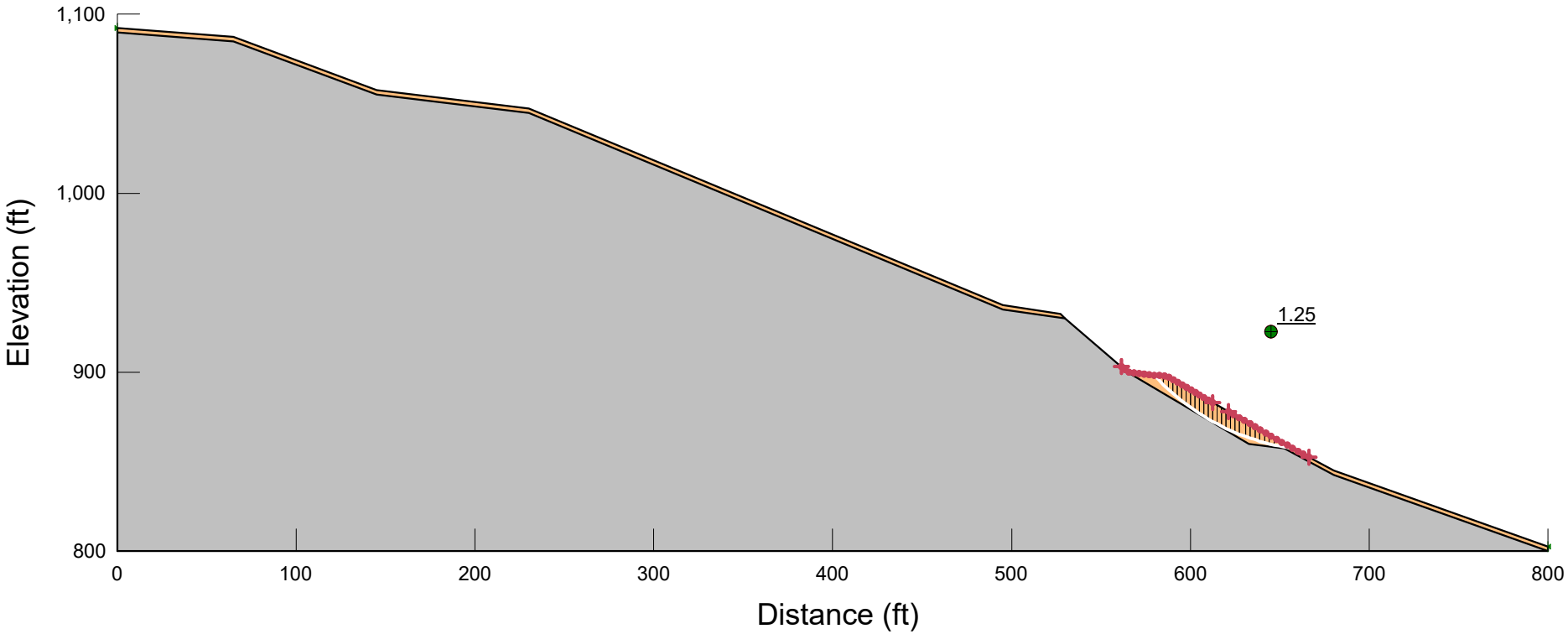
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

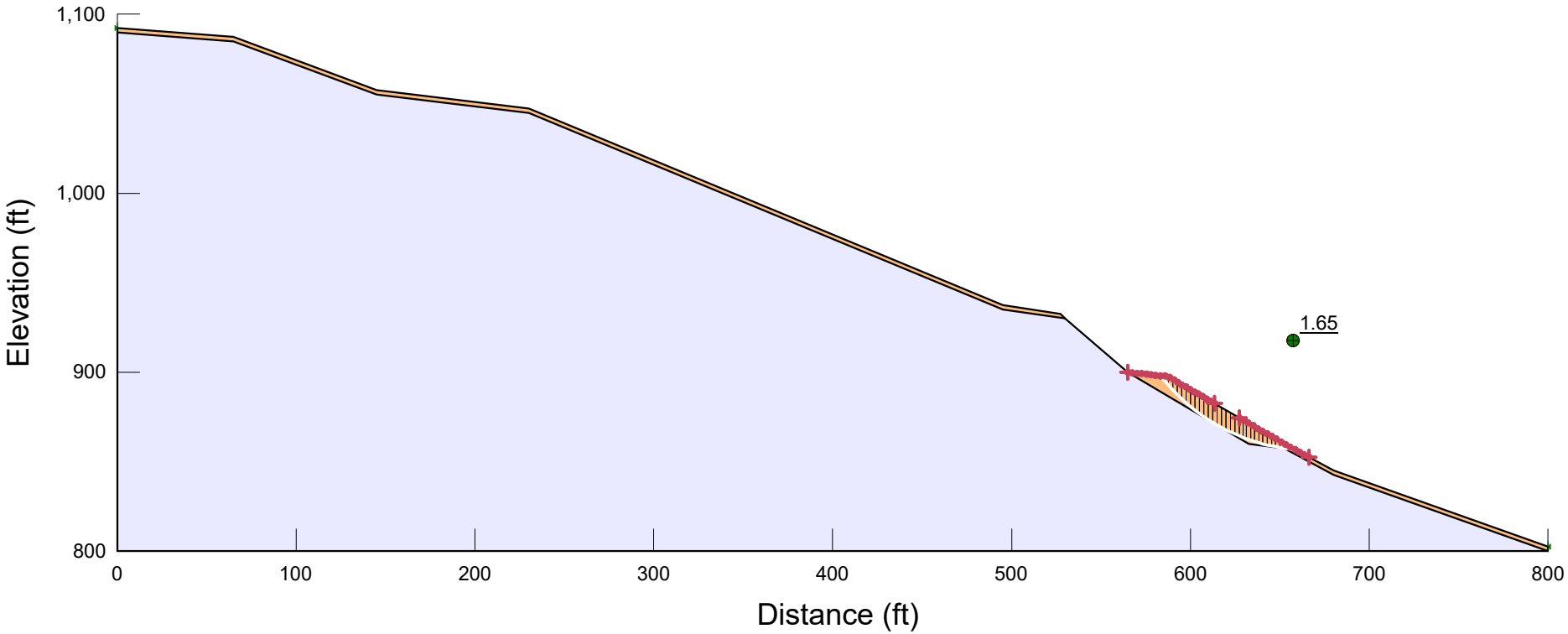


Title: Stevens Creek Road (Section A)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 5. Santa Clara (Sensitivity)
Name: 5a. Static Analysis

Factor of Safety: 1.65

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara (Sensitivity) | Mohr-Coulomb | 165 | 820 | 24 |



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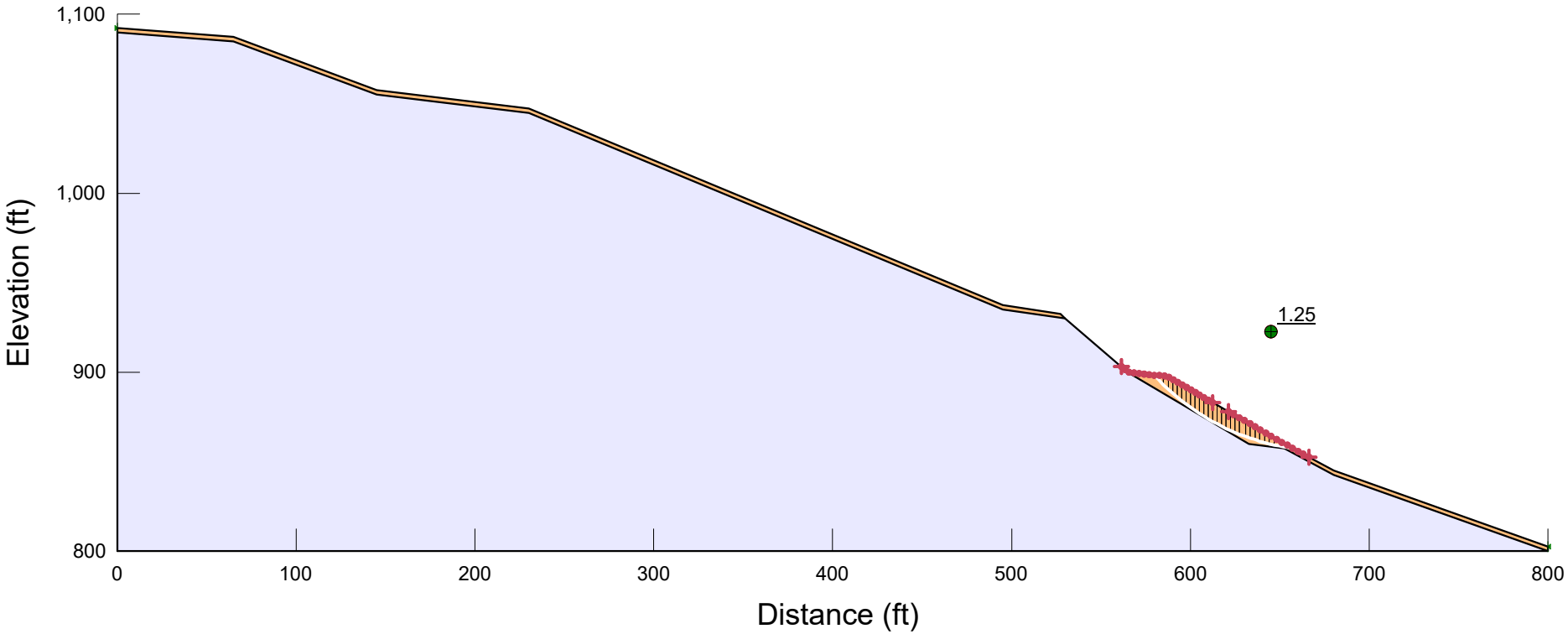
Date: 05/20/2019
File Name: 233001328 SCQ Road Section A (20190516).gsz

Parent: 5. Santa Clara (Sensitivity)
Name: 5b. Pseudostatic Analysis

Factor of Safety: 1.25

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara (Sensitivity) | Mohr-Coulomb | 165 | 820 | 24 |

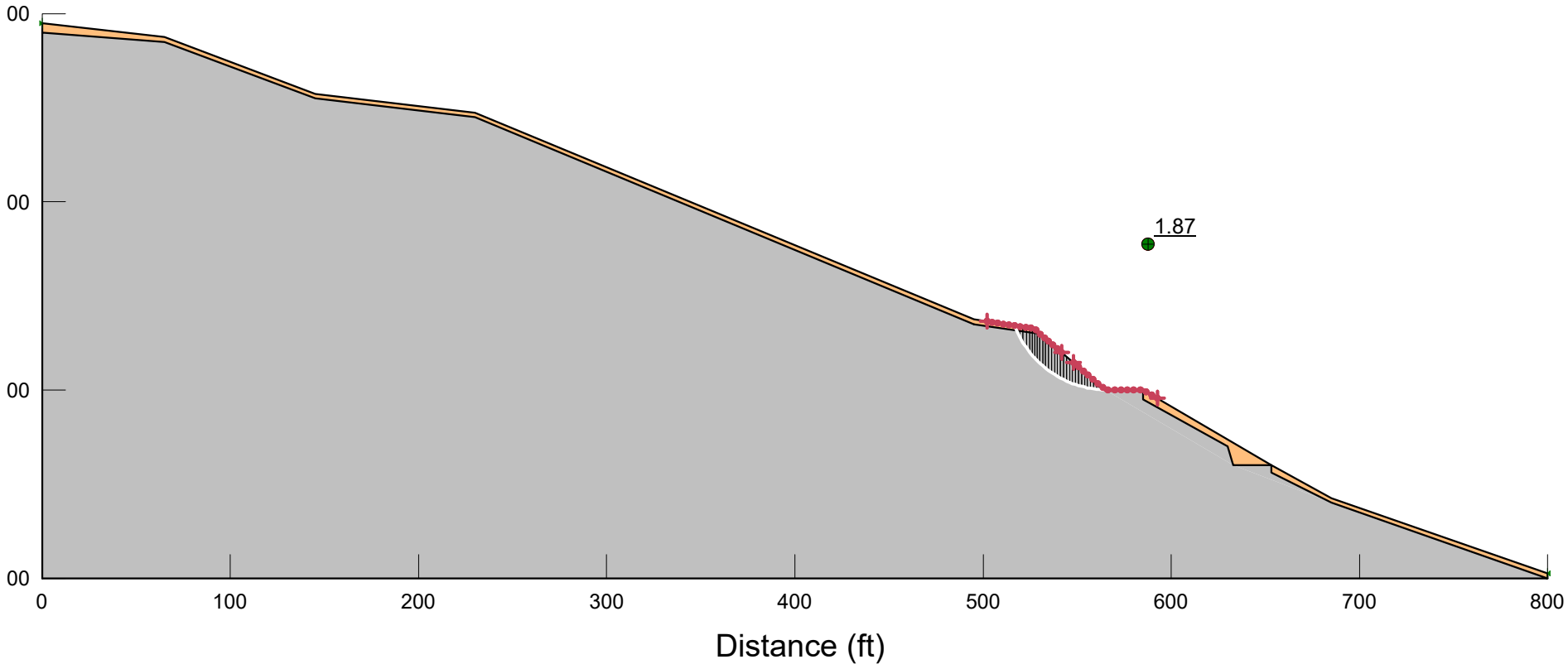


Title: Stevens Creek Road (Section B)
Date: 05/16/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 1. Cut Slope (Local)
Name: 1a. Static Analysis

Factor of Safety: 1.87

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

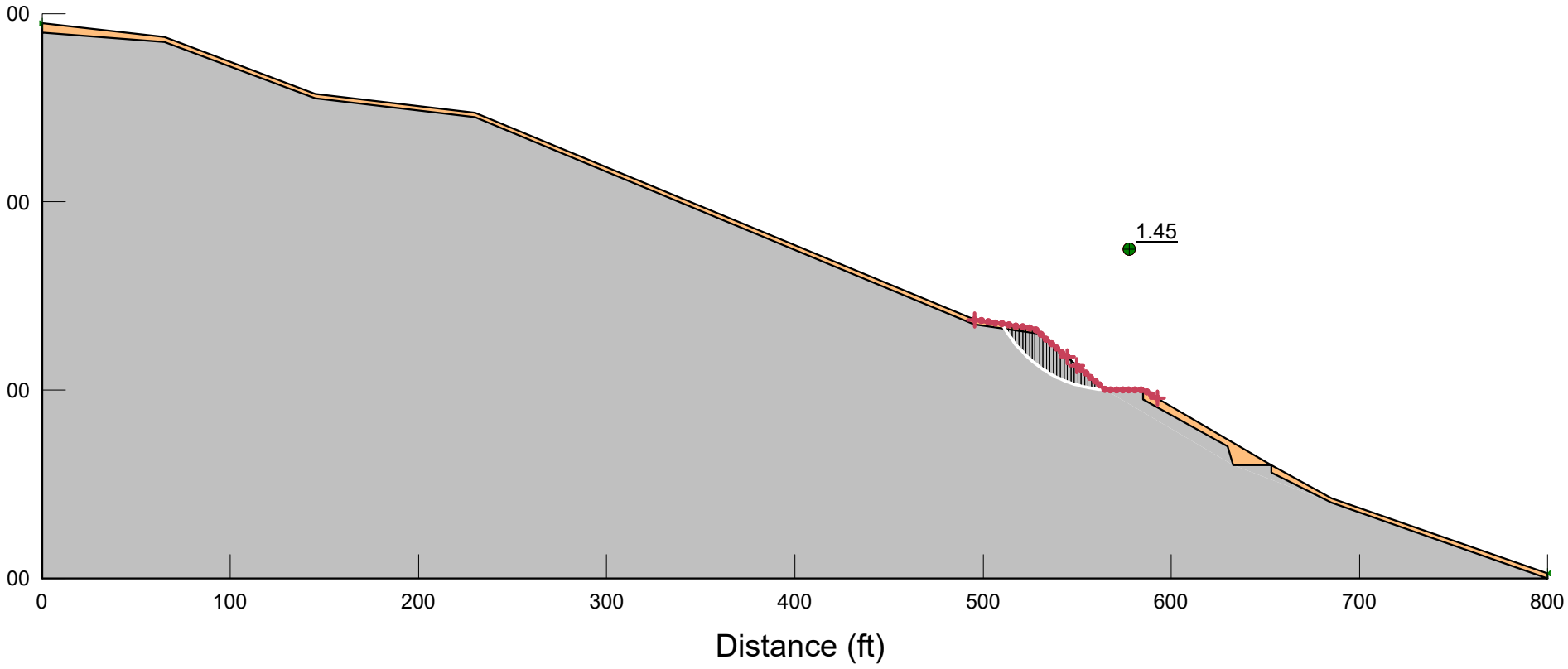


Title: Stevens Creek Road (Section B)
Date: 05/16/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 1. Cut Slope (Local)
Name: 1b. Pseudostatic Analysis

Factor of Safety: 1.45

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

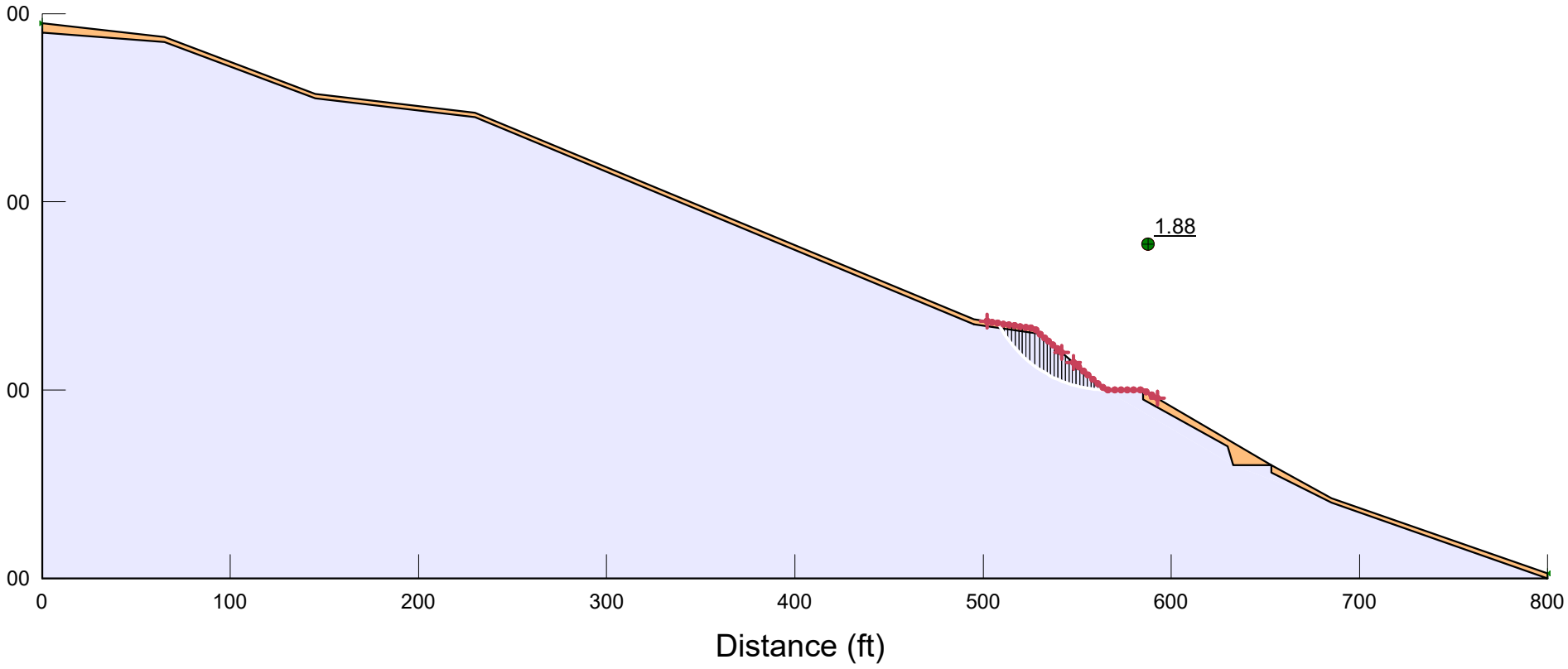


Title: Stevens Creek Road (Section B)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 1. Cut Slope (Local)
Name: 1c. Static Analysis (Sensitivity)

Factor of Safety: 1.88

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara (Sensitivity) | Mohr-Coulomb | 165 | 820 | 24 |

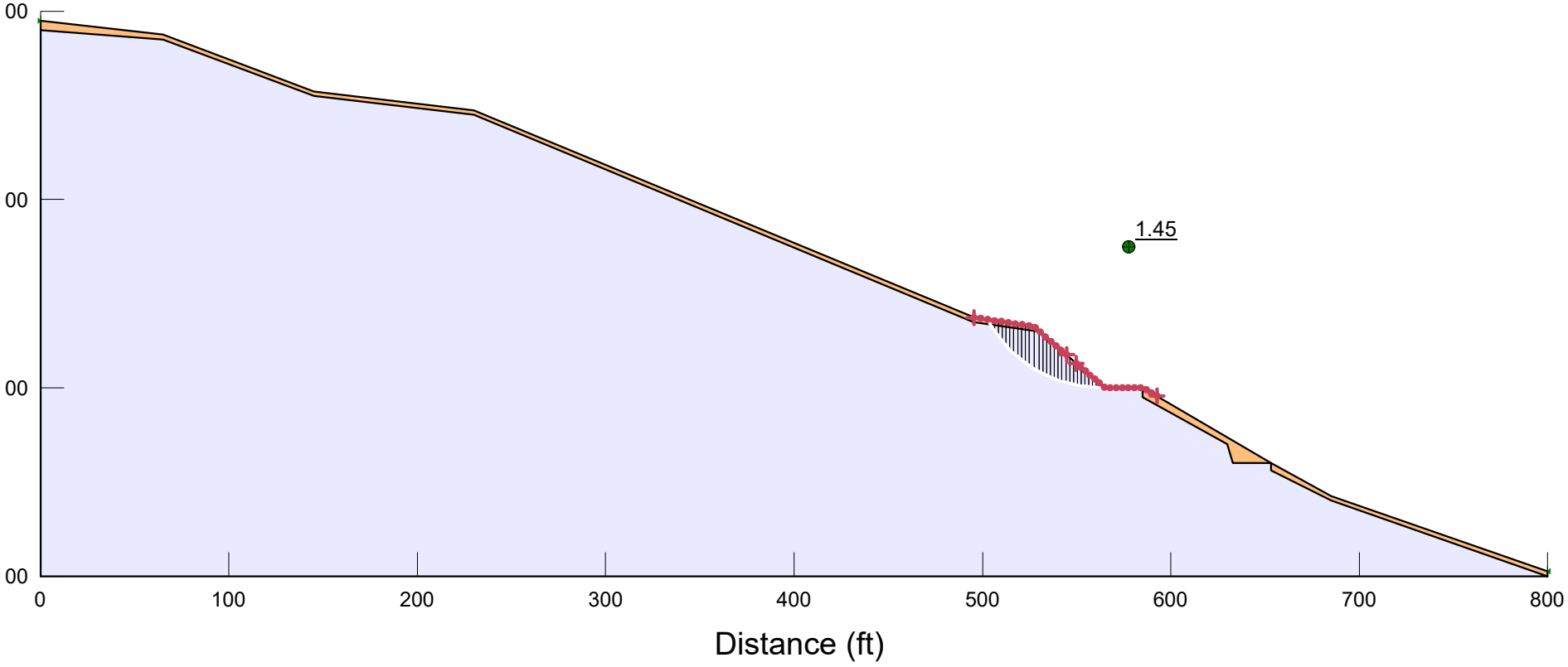


Title: Stevens Creek Road (Section B)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 1. Cut Slope (Local)
Name: 1d. Pseudostatic Analysis (Sensitivity)

Factor of Safety: 1.45

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara (Sensitivity) | Mohr-Coulomb | 165 | 820 | 24 |

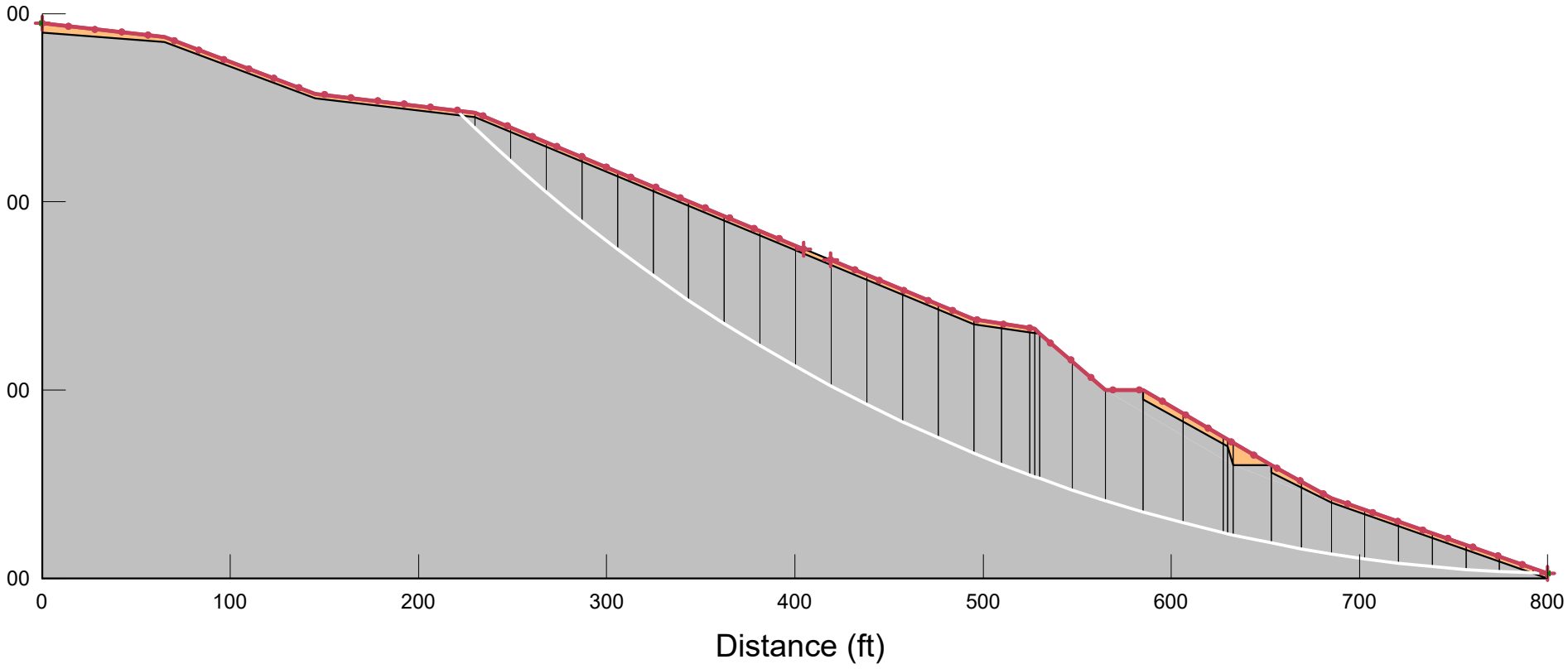


Title: Stevens Creek Road (Section B)
Date: 05/16/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 2. Cut Slope (Global)
Name: 2a. Static Analysis

Factor of Safety: 1.78

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

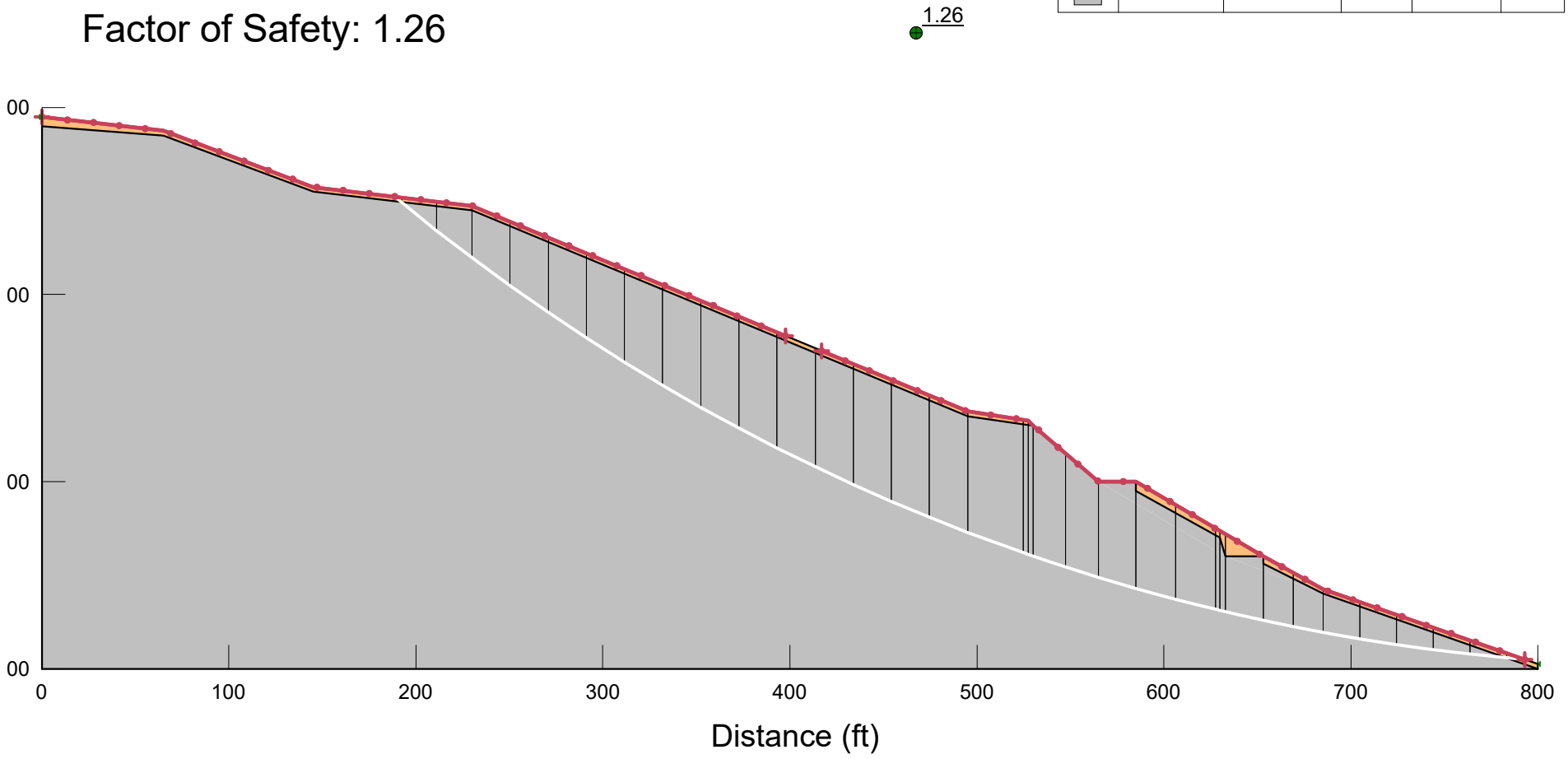


Title: Stevens Creek Road (Section B)
Date: 05/16/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 2. Cut Slope (Global)
Name: 2b. Pseudostatic Analysis

Factor of Safety: 1.26

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

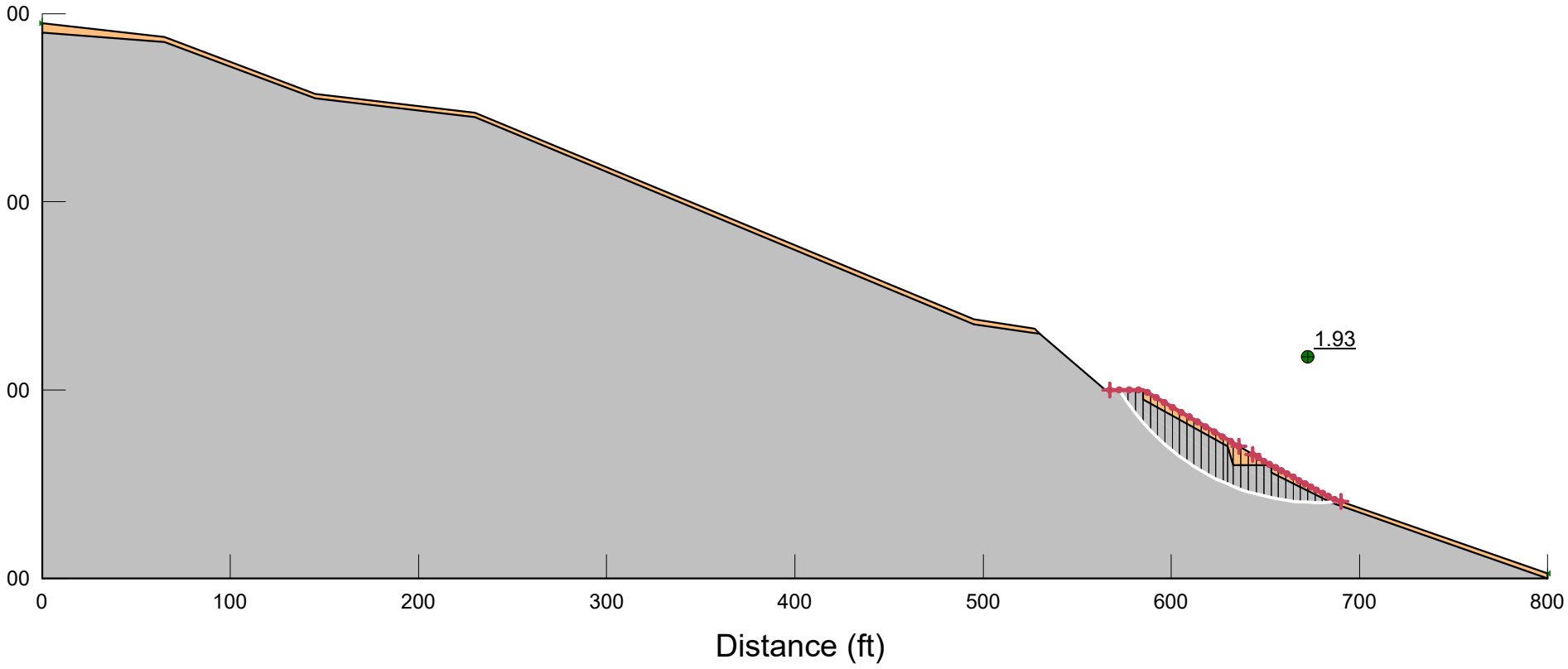


Title: Stevens Creek Road (Section B)
Date: 05/16/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 3. Fill Slope
Name: 3a. Static Analysis

Factor of Safety: 1.93

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

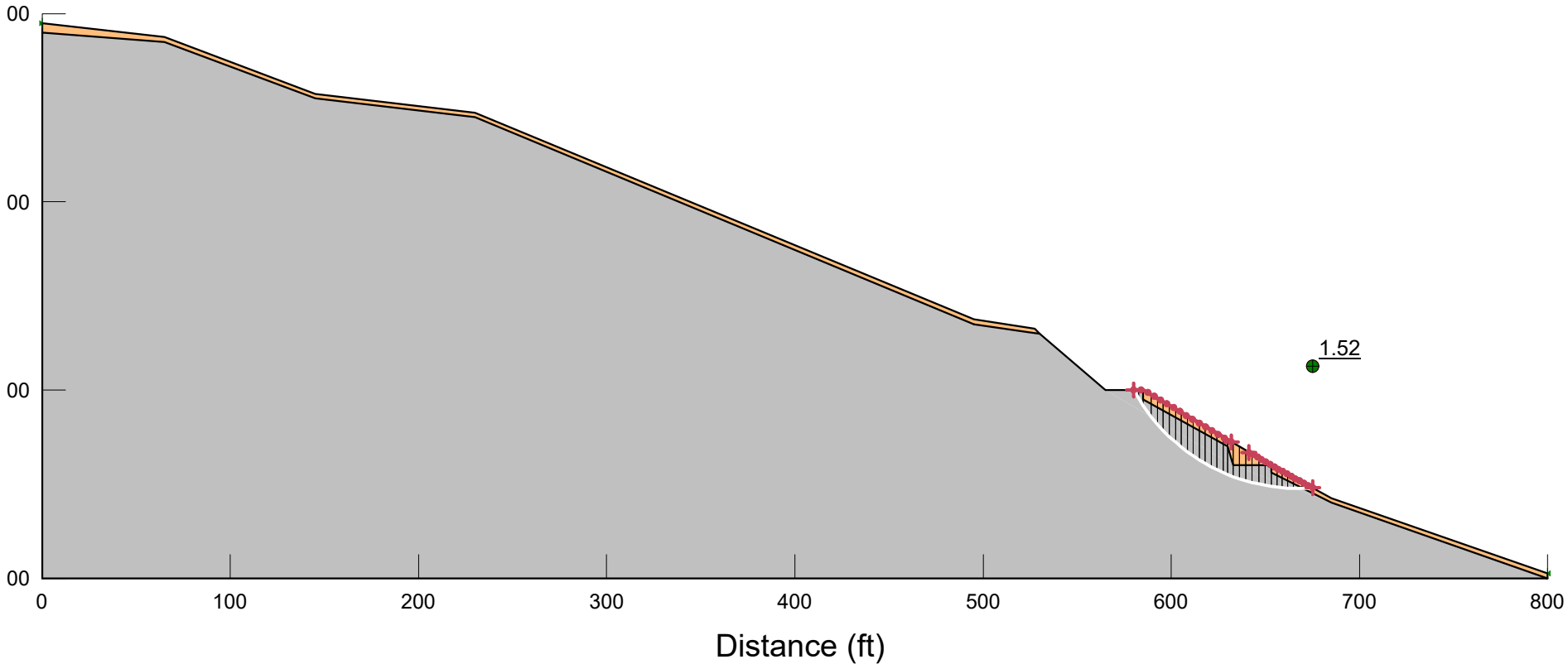


Title: Stevens Creek Road (Section B)
Date: 05/16/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 3. Fill Slope
Name: 3b. Pseudostatic Analysis

Factor of Safety: 1.52

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

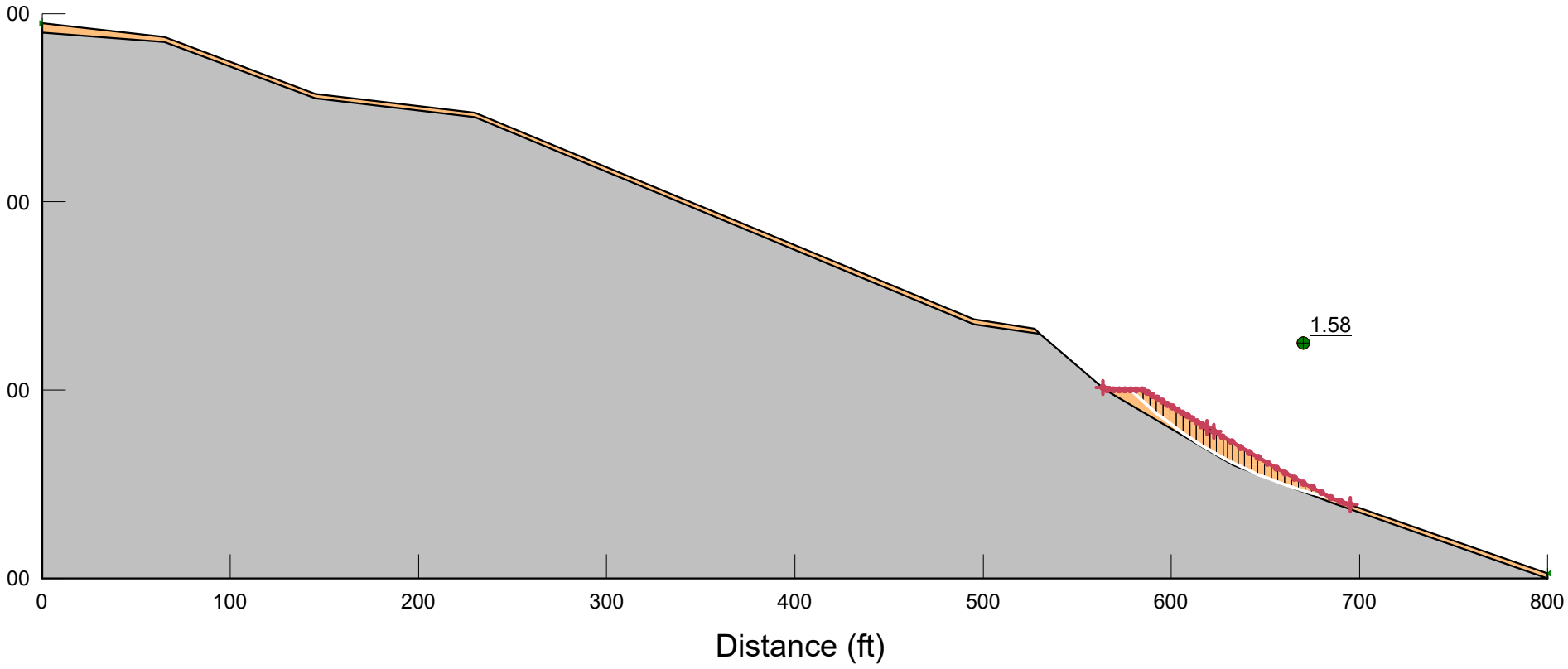


Title: Stevens Creek Road (Section B)
Date: 05/16/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 4. Fill Slope (Sensitivity)
Name: 4a. Static Analysis

Factor of Safety: 1.58

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

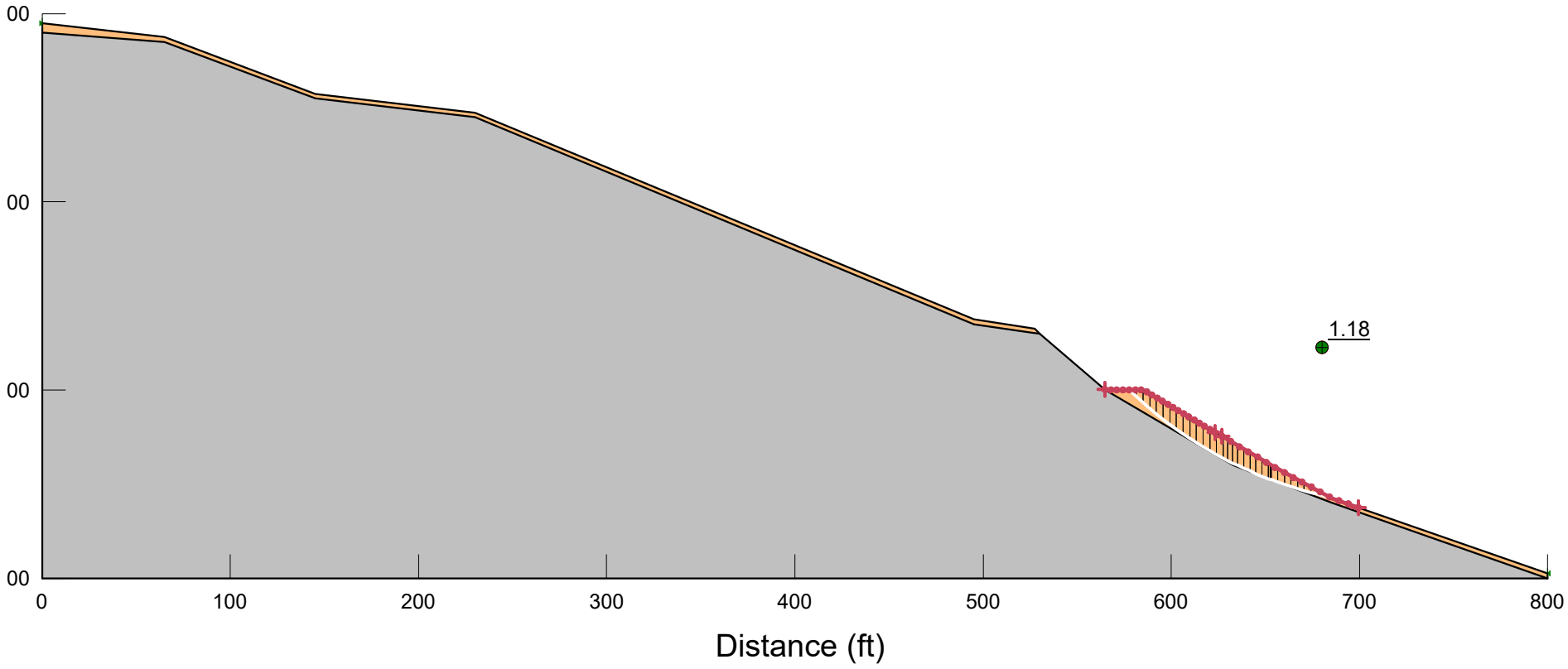


Title: Stevens Creek Road (Section B)
Date: 05/16/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 4. Fill Slope (Sensitivity)
Name: 4b. Pseudostatic Analysis

Factor of Safety: 1.18

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara | Mohr-Coulomb | 165 | 550 | 33 |

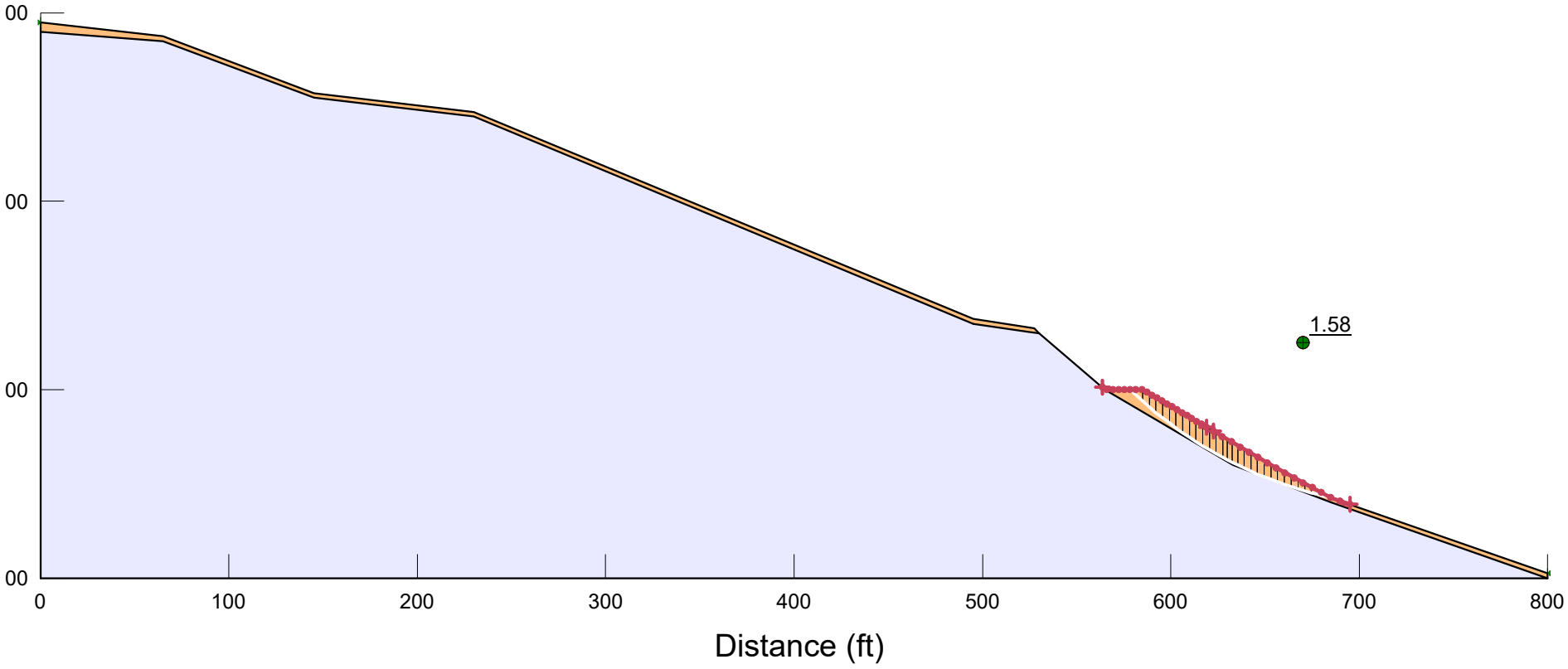


Title: Stevens Creek Road (Section B)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 5. Santa Clara (Sensitivity)
Name: 5a. Static Analysis

Factor of Safety: 1.58

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara (Sensitivity) | Mohr-Coulomb | 165 | 820 | 24 |

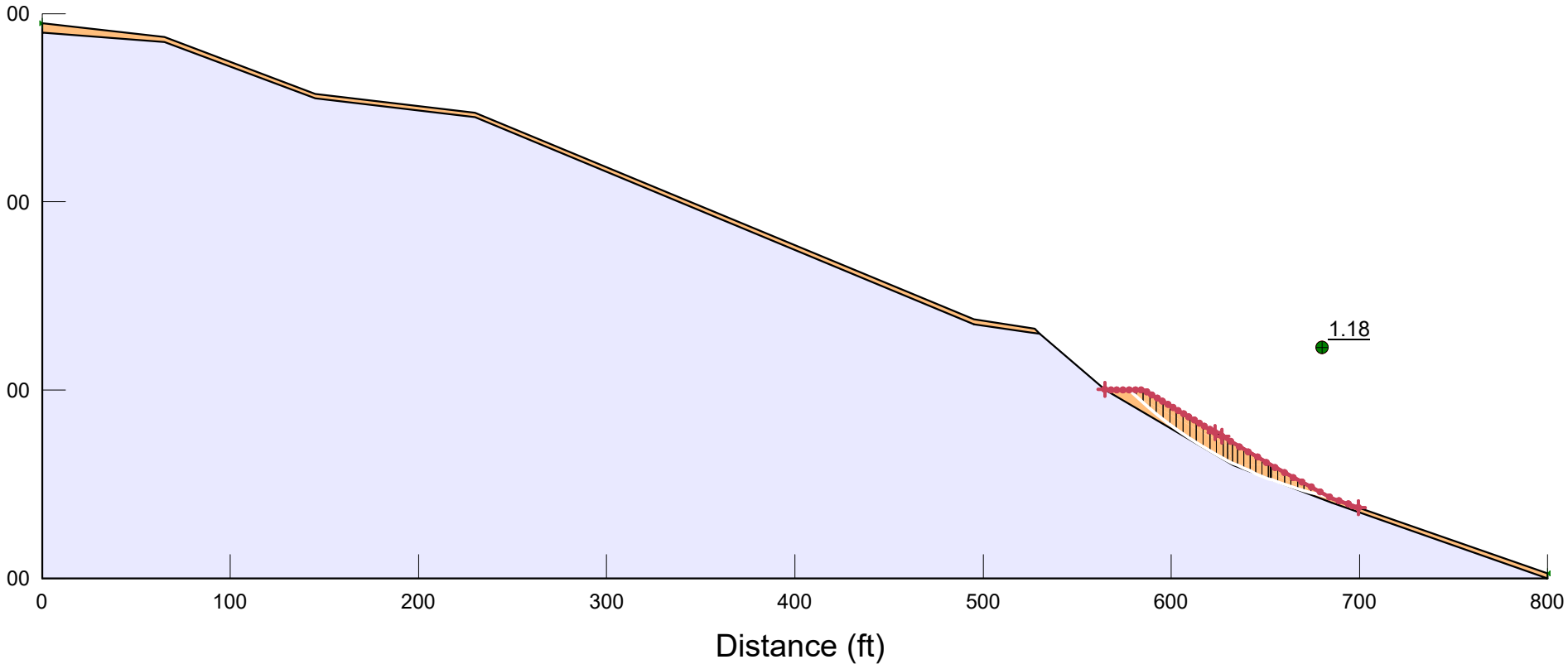


Title: Stevens Creek Road (Section B)
Date: 05/20/2019
File Name: 233001328 SCQ Road Section B (20190516).gsz

Parent: 5. Santa Clara (Sensitivity)
Name: 5b. Pseudostatic Analysis

Factor of Safety: 1.18

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |
| | Santa Clara (Sensitivity) | Mohr-Coulomb | 165 | 820 | 24 |

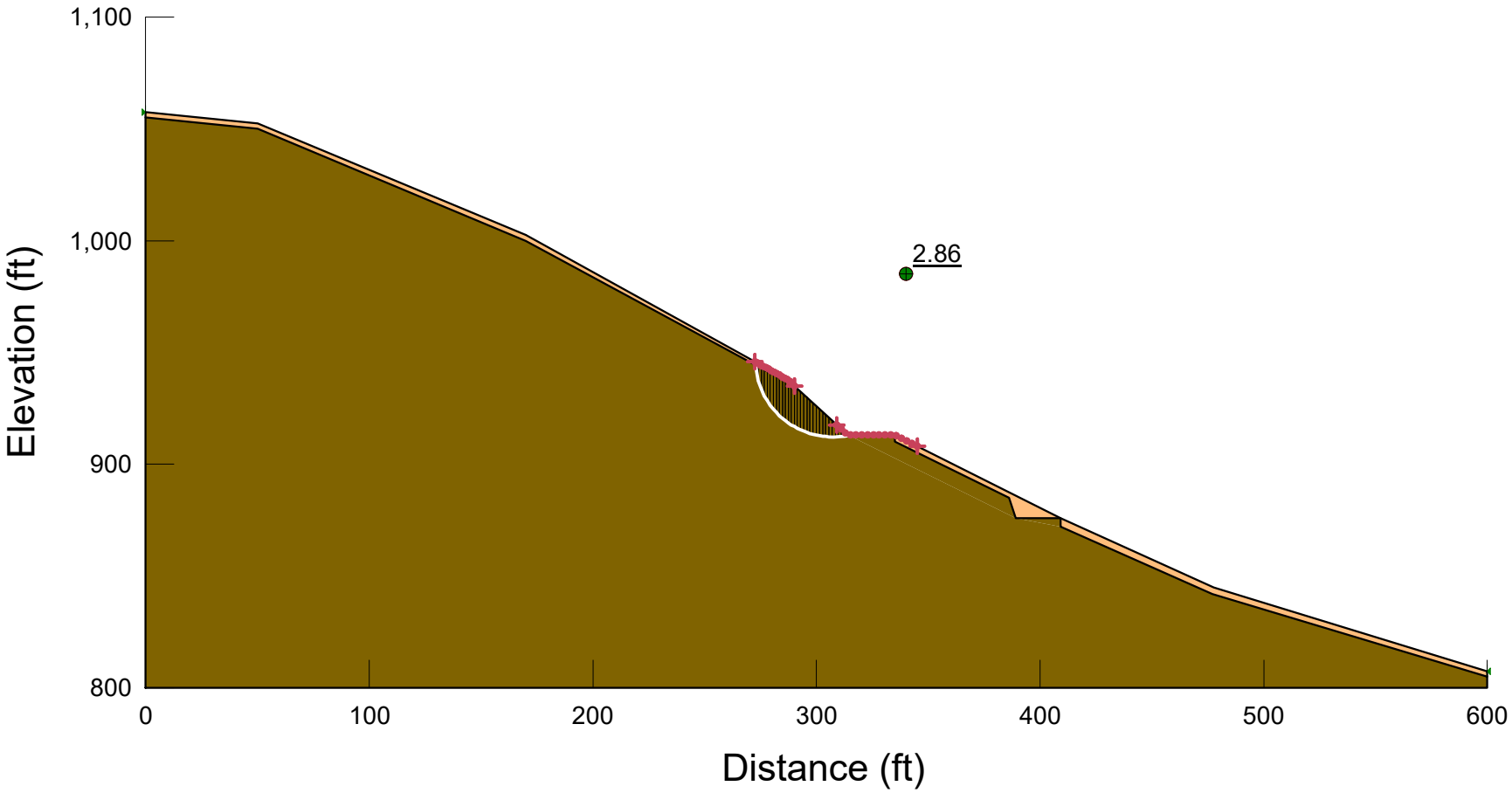


Title: Stevens Creek Road (Section C)
Date: 05/21/2019
File Name: 233001328 SCQ Road Section C (20190521).gsz

Parent: 1. Cut Slope (Local)
Name: 1a. Static Analysis

Factor of Safety: 2.86

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Greenstone | Mohr-Coulomb | 165 | 1,400 | 23 |
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |

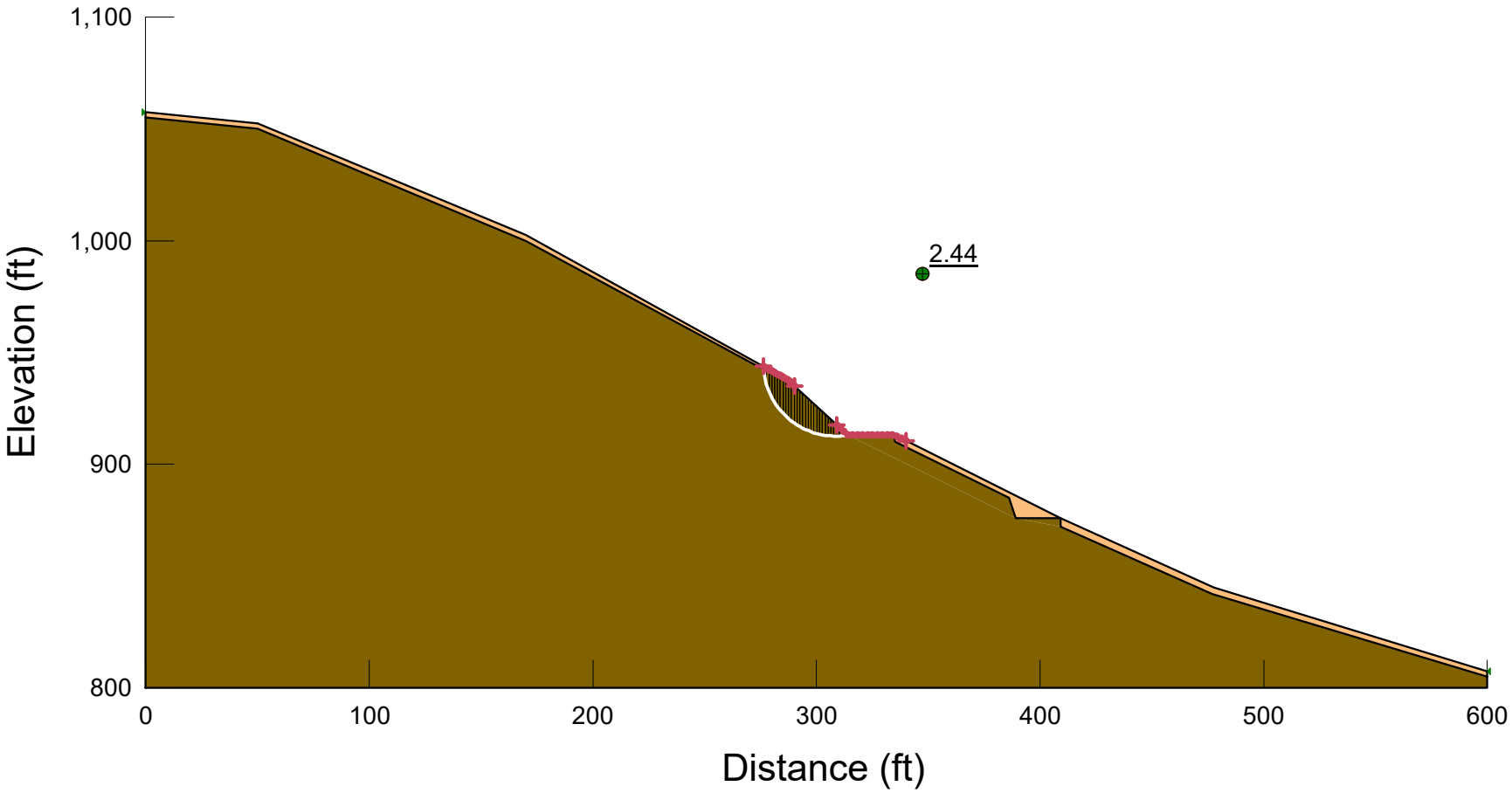


Title: Stevens Creek Road (Section C)
Date: 05/21/2019
File Name: 233001328 SCQ Road Section C (20190521).gsz

Parent: 1. Cut Slope (Local)
Name: 1b. Pseudostatic Analysis

Factor of Safety: 2.44

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Greenstone | Mohr-Coulomb | 165 | 1,400 | 23 |
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |



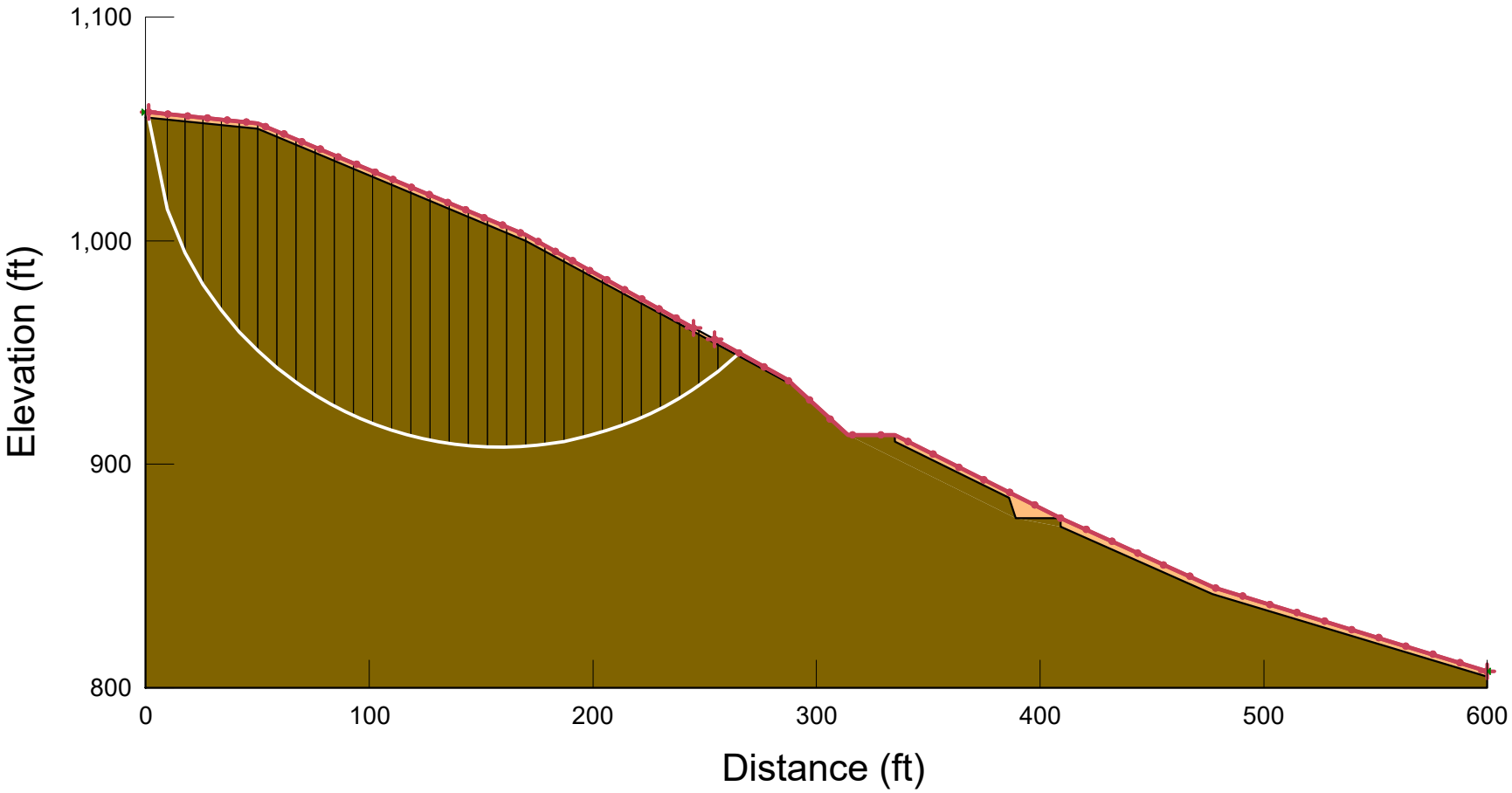
Title: Stevens Creek Road (Section C)
Date: 05/21/2019
File Name: 233001328 SCQ Road Section C (20190521).gsz

Parent: 2. Cut Slope (Global)
Name: 2a. Static Analysis

Factor of Safety: 1.28

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Greenstone | Mohr-Coulomb | 165 | 1,400 | 23 |
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |

1.28



Title: Stevens Creek Road (Section C)
Date: 05/21/2019
File Name: 233001328 SCQ Road Section C (20190521).gsz

Parent: 2. Cut Slope (Global)
Name: 2b. Pseudostatic Analysis

Factor of Safety: 1.02

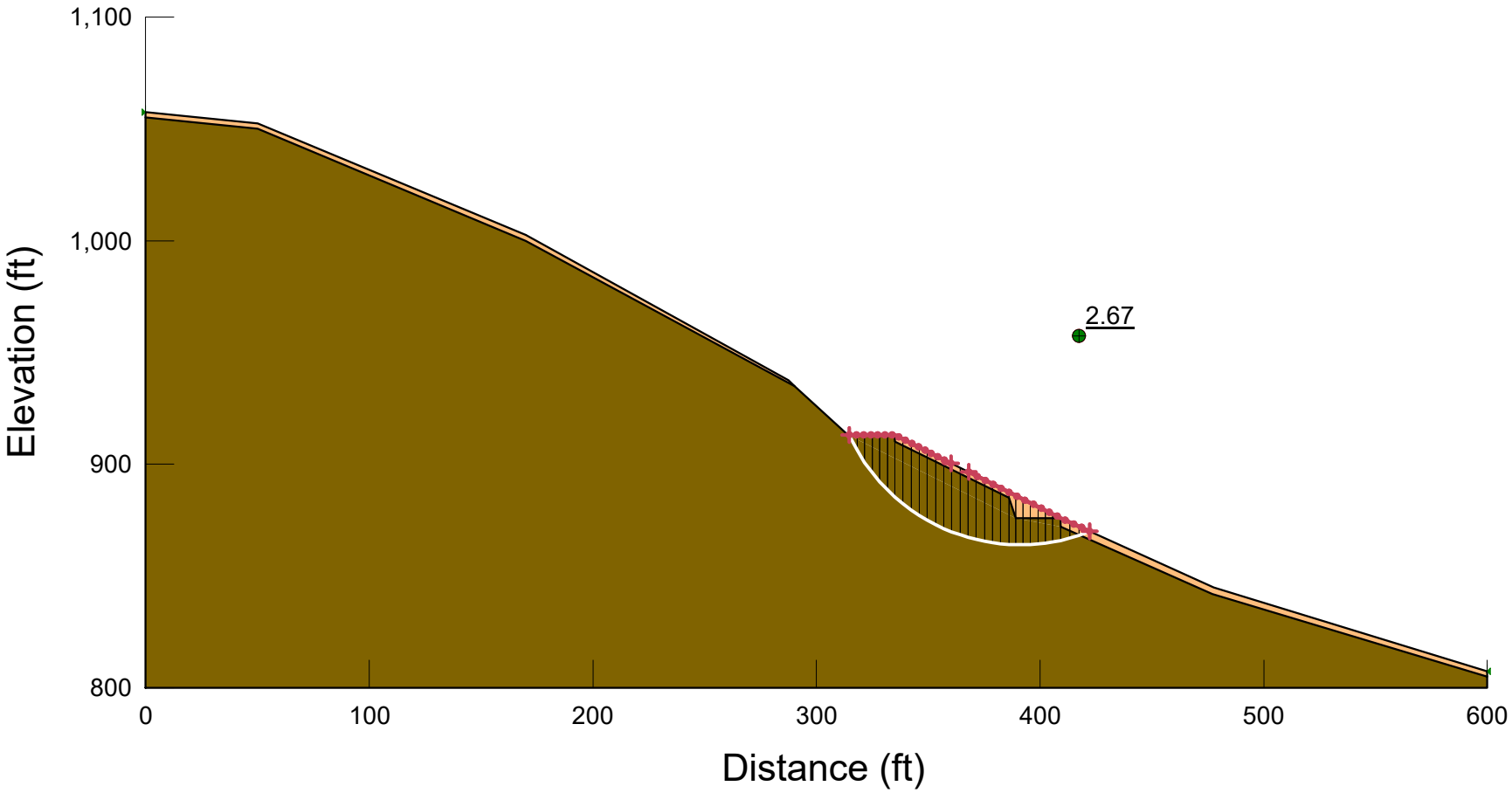
| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Greenstone | Mohr-Coulomb | 165 | 1,400 | 23 |
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |

Title: Stevens Creek Road (Section C)
Date: 05/21/2019
File Name: 233001328 SCQ Road Section C (20190521).gsz

Parent: 3. Fill Slope
Name: 3a. Static Analysis

Factor of Safety: 2.67

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Greenstone | Mohr-Coulomb | 165 | 1,400 | 23 |
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |

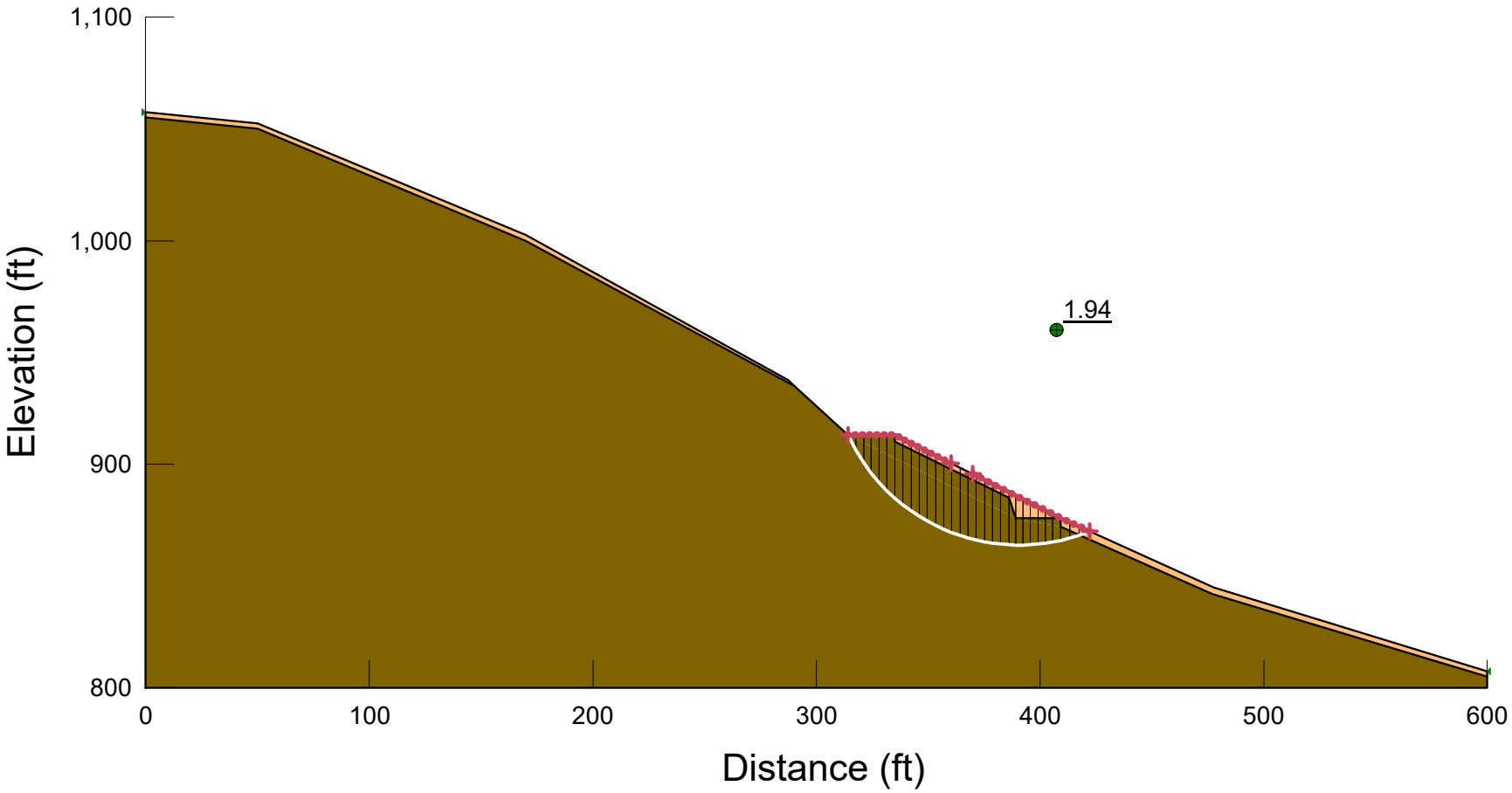


Title: Stevens Creek Road (Section C)
Date: 05/21/2019
File Name: 233001328 SCQ Road Section C (20190521).gsz

Parent: 3. Fill Slope
Name: 3b. Pseudostatic Analysis

Factor of Safety: 1.94

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Greenstone | Mohr-Coulomb | 165 | 1,400 | 23 |
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |

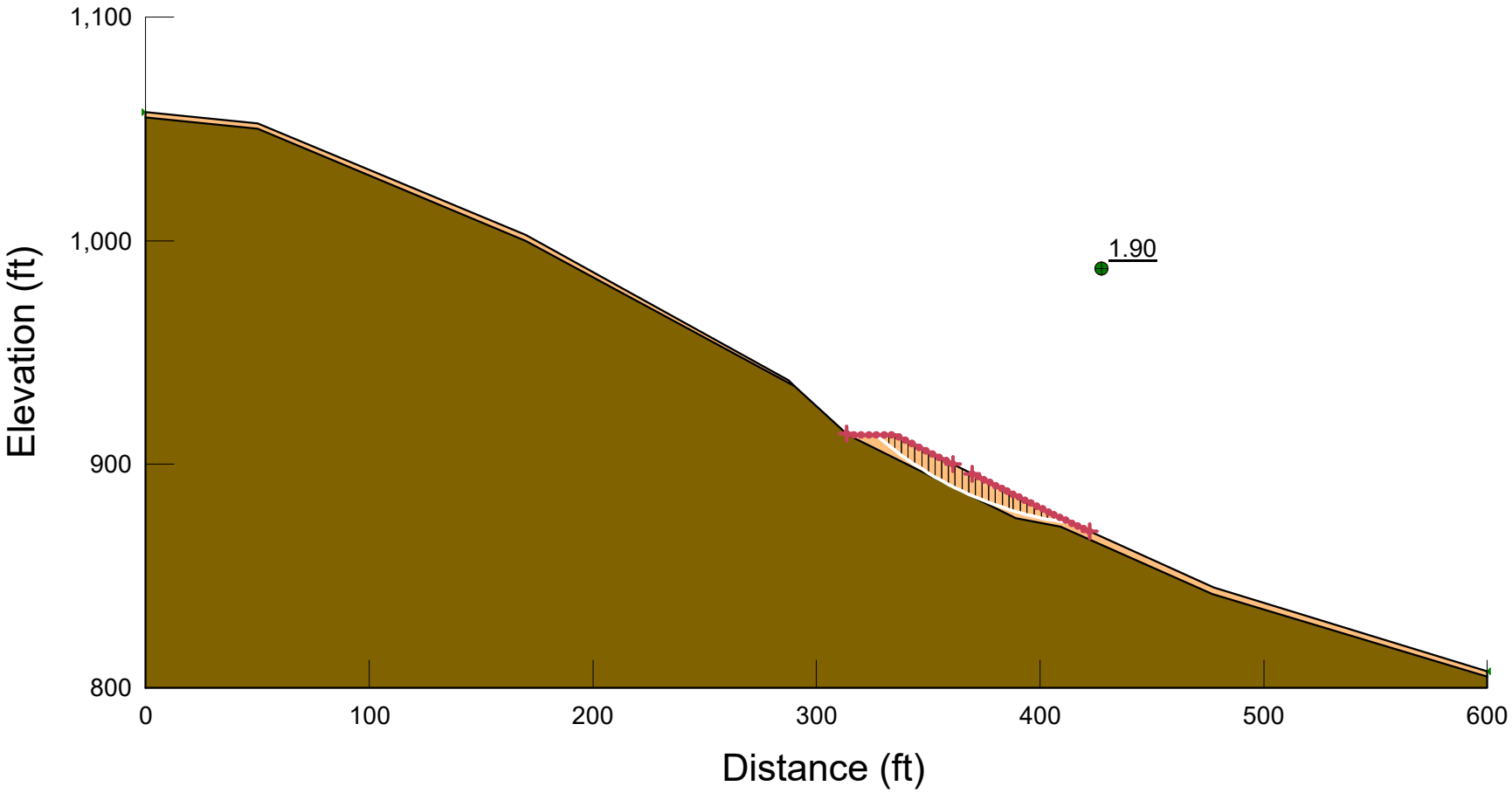


Title: Stevens Creek Road (Section C)
Date: 05/21/2019
File Name: 233001328 SCQ Road Section C (20190521).gsz

Parent: 4. Fill Slope (Sensitivity)
Name: 4a. Static Analysis

Factor of Safety: 1.90

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Greenstone | Mohr-Coulomb | 165 | 1,400 | 23 |
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |

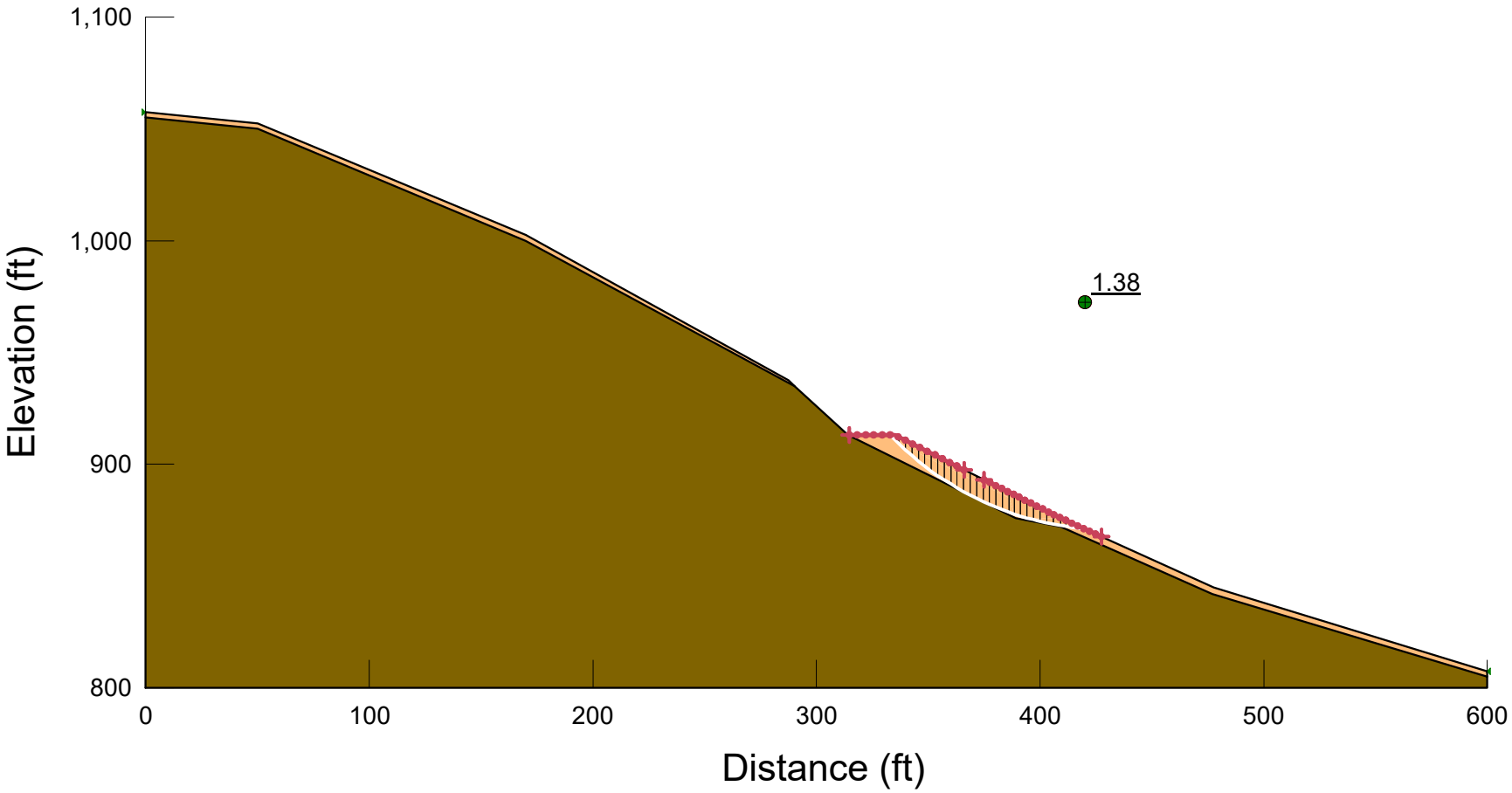


Title: Stevens Creek Road (Section C)
Date: 05/21/2019
File Name: 233001328 SCQ Road Section C (20190521).gsz

Parent: 4. Fill Slope (Sensitivity)
Name: 4b. Pseudostatic Analysis

Factor of Safety: 1.38

| Color | Name | Model | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|---|
| | Greenstone | Mohr-Coulomb | 165 | 1,400 | 23 |
| | Residual Soil | Mohr-Coulomb | 120 | 200 | 30 |



PERMANENTE QUARRY UTILITY ROAD

# VISIBILITY ASSESSMENT

**MAY** | 2019

Prepared for
Lehigh Southwest Cement Company

Preparer
Benchmark Resources

BENCHMARK RESOURCES

PERMANENTE QUARRY UTILITY ROAD

# VISIBILITY ASSESSMENT

**MAY** | 2019

Prepared for
Lehigh Southwest Cement Company
24001 Stevens Creek Boulevard, Cupertino, CA 95104

Preparer
Benchmark Resources
2515 East Bidwell Street, Folsom, CA 95630

# TABLE OF CONTENTS

# PERMANENTE QUARRY UTILITY ROAD
# VISIBILITY ASSESSMENT

## 1. INTRODUCTION

Benchmark Resources has prepared this visibility assessment on behalf of Lehigh Southwest Cement Company (Lehigh) as requested by the Santa Clara County (County) Planning Department. Permanente Quarry is a limestone and aggregate mining operation located in the Santa Clara County foothills west of the city of Cupertino. This report provides an assessment of the visibility of a utility road and adjacent disturbed surfaces (totaling 1.3 acres) from key viewpoints in the surrounding area. Figure 1, "Aerial of Utility Road and Surrounding Topography," and Figure 2, "Oblique of Utility Road and Surrounding Topography," show the location of the utility road relative to the surrounding topography and area. Figure 3, "Viewpoint Locations," shows the locations of the viewpoints assessed. These viewpoints represent the areas with the highest potential for viewing the utility road. Only Viewpoint 3 (located in an elevated, residential area of Cupertino) provides a view of the current utility road. (See Figure 4, "Existing Conditions Viewpoints," for a panoramic photograph of Viewpoint 3). A portion of the westerly fill slope (not the road surface) is visible. The slope will become less visible after it is vegetated. Implementation of reclamation (i.e., reducing the slope and final revegetation) is expected to eliminate the visual contrast visible from this viewpoint.

## 2. PROJECT SUMMARY

The utility access road is a preexisting roadway that was previously limited to general-purpose access and utility company (currently Pacific Gas and Electric Company [PG&E]) access to power lines in the area. In spring 2018, the road was improved to allow off-road haul trucks from the neighboring Stevens Creek Quarry to obtain aggregate material from the Permanente Quarry aggregate plant. The County directed Lehigh to cease using the utility road and amend the approved 2012 reclamation plan to include the utility road disturbance area. Use of the road for transport of mine materials to Stevens Creek Quarry has been suspended pending approval of the reclamation plan boundary to include the road (and approval of a permit allowing Stevens Creek Quarry to import such materials). The utility road continues to be used only for intermittent light-duty vehicle access and utility company access.

At reclamation, the road would be reduced to 20 feet wide with a 2:1 (horizontal to vertical) side slope. The slopes above and below the road would be revegetated to blend with the surrounding vegetation. These activities make up the project.

## 3. VIEWPOINT ASSESSMENT

Five viewpoint locations were photographed that represent the areas with the highest potential for viewing the utility road from public roadways in the local community. See Figure 4 to view panoramic photographs of Viewpoints 1–5, which include labels on the photographs to show the location of the utility road. The following subsections provide a brief description of each viewpoint followed by an assessment of the visibility of the utility road from each viewpoint.

### *3.1 Viewpoint 1: Rancho San Antonio County Park, from Anza Knoll Looking Southwest*

Anza Knoll is a designated scenic vista off of the Hammond-Snyder Loop Trail, approximately 1 mile northeast of Permanente Quarry. The Anza Knoll provides a bench overlooking the San Francisco Bay,

Santa Clara Valley, and surrounding mountains. Views are scenic and distinct for visitors facing north (San Francisco Bay), east (Santa Clara Valley), and south (surrounding mountains). Views to the west are industrial, as the viewshed includes a large substation and clear views of quarry operations.

Views of the utility road are blocked by intervening hills. No views of the utility road are available from this viewpoint.

### *3.2 Viewpoint 2: Mary Avenue Bicycle Footbridge over Interstate 280 Looking West*

Views from Viewpoint 2 are from the Mary Avenue Bicycle Footbridge, which spans I-280, approximately 2 miles from Permanente Quarry. This perspective is representative of views seen by motorists traveling north on I-280, looking southwest. Views of Permanente Quarry are moderated somewhat by the relatively long distance to the quarry and intervening visual features, including highway overpasses, signage, landscaping, roads, and buildings. Views toward the quarry are dominated by natural features associated with vegetated hillsides and open space uses that surround the property. The industrial uses in the area mark an interruption in vegetation, and portions of the quarry appear as exposed rock amidst vegetated open space areas. Motorists' views would be of short to medium duration because they would be exposed partially screened views of the quarry for short distances.

Views of the utility road are blocked by intervening hills. No views of the utility road are available from this viewpoint.

### *3.3 Viewpoint 3: Canyon View Circle Looking Northwest*

Canyon View Circle near Lindy Lane in Cupertino is a two-lane residential road with low travel volumes, traveled mainly by residents in the area. Viewpoint 3 is located in an elevated area of Cupertino. Views along public roads in this area are of a more natural landscape combined with residential homes. Distant views from public roads in the area are fully obstructed by foreground topography, vegetation, and structures, except from Viewpoint 3, which provides a brief view of the North Quarry ridgeline and West Materials Storage Area (WMSA) from the south, looking northwest. In the foreground is a partial view of disturbance related to Stevens Creek Quarry.

A portion of the utility road can be seen just below the Stevens Creek Quarry mined area, as labeled on the Viewpoint 3 photograph in Figure 4. This portion of the road is visible, but does not stand out as noteworthy in relation to the surrounding surface disturbance. After the slope above the road is vegetated to control erosion, the portion of the road visible from this viewpoint would not contrast with the surroundings. Reclamation would further reduce visibility of the road from this viewpoint.

### *3.4 Viewpoint 4: Coyote Ridge Trail (Fremont Older Open Space Preserve)*

Views of Permanente Quarry are visible primarily from the Coyote Ridge Trail, a roughly 2.1 mile trail that traverses the Fremont Older Preserve in a north/south direction. The visual quality of the trail is generally distinctive, with intermittent views of industrial transmission towers and lines, and nearby residences. Views of the quarry along the lower (northern) portion of the trail range from fully to partially screened by intervening topography and trees. The photograph for Viewpoint 4 shows a view of the quarry approximately 0.5 mile from the northern trailhead within Fremont Older Preserve. As shown in the photograph, the WSMA, North Quarry, and Cement Plant are visible in the viewshed background. Other features in the viewshed include the Stevens Creek Quarry in the middleground view, a

transmission line that runs over the trail in the foreground, and chaparral and oak-covered ridges in all directions.

Views of the utility road are blocked by intervening hills. No views of the utility road are available from this viewpoint.

### *3.5 Viewpoint 5: Maisie's Peak (Fremont Older Open Space Preserve)*

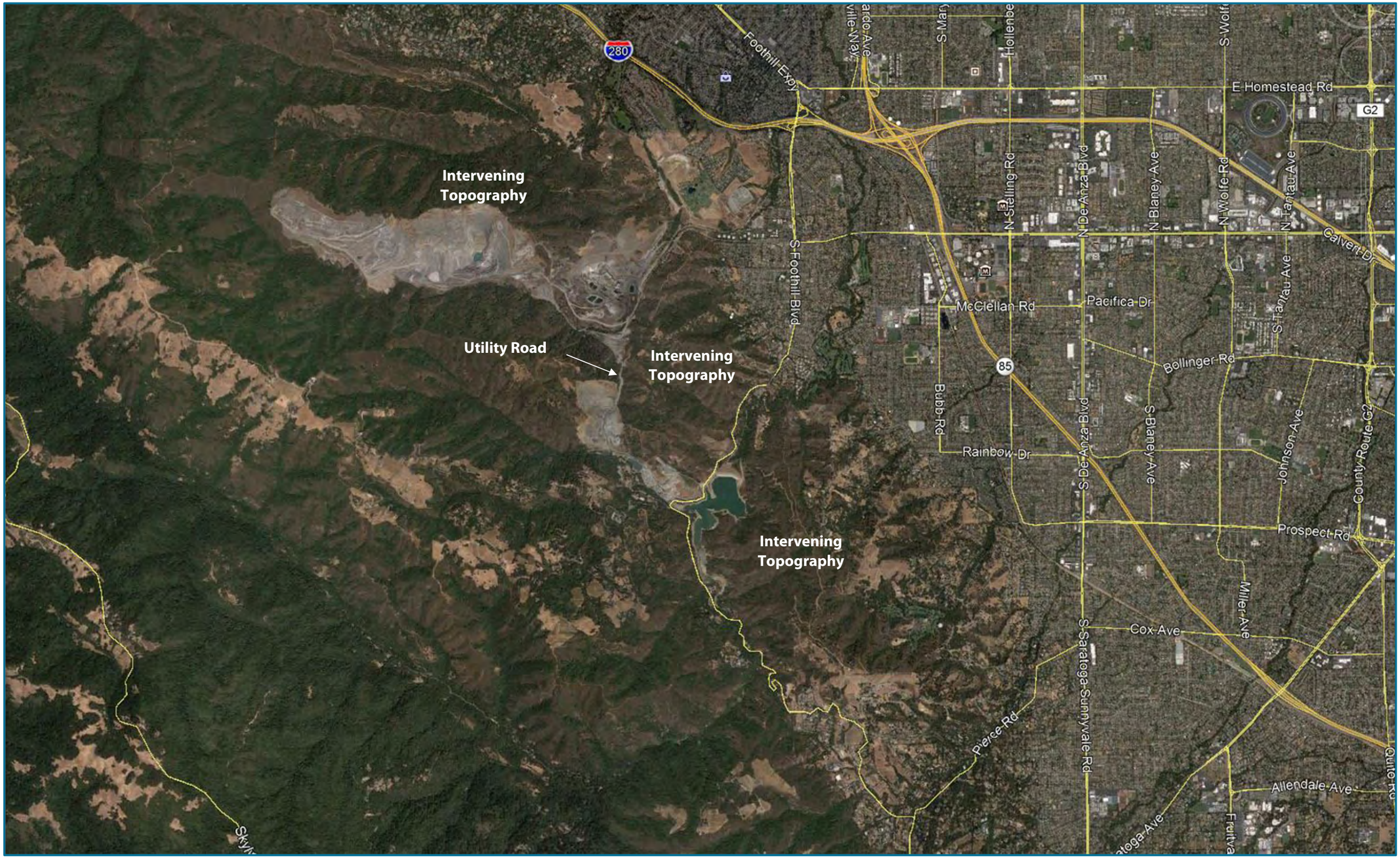
Maisie's Peak is a designated scenic vista and the highest point in Fremont Older Preserve. From this location the intermittent views of Permanente Quarry become more open and panoramic. The photograph for Viewpoint 5 shows the view from Maisie's Peak. Permanente Quarry is clearly visible, including the WMSA, the quarry pit, a small portion of the East Materials Storage Area, and the roads within the quarry and the Cement Plant.

Views of the utility road are blocked by intervening hills. No views of the utility road are available from this viewpoint.

## 4. CONCLUSION

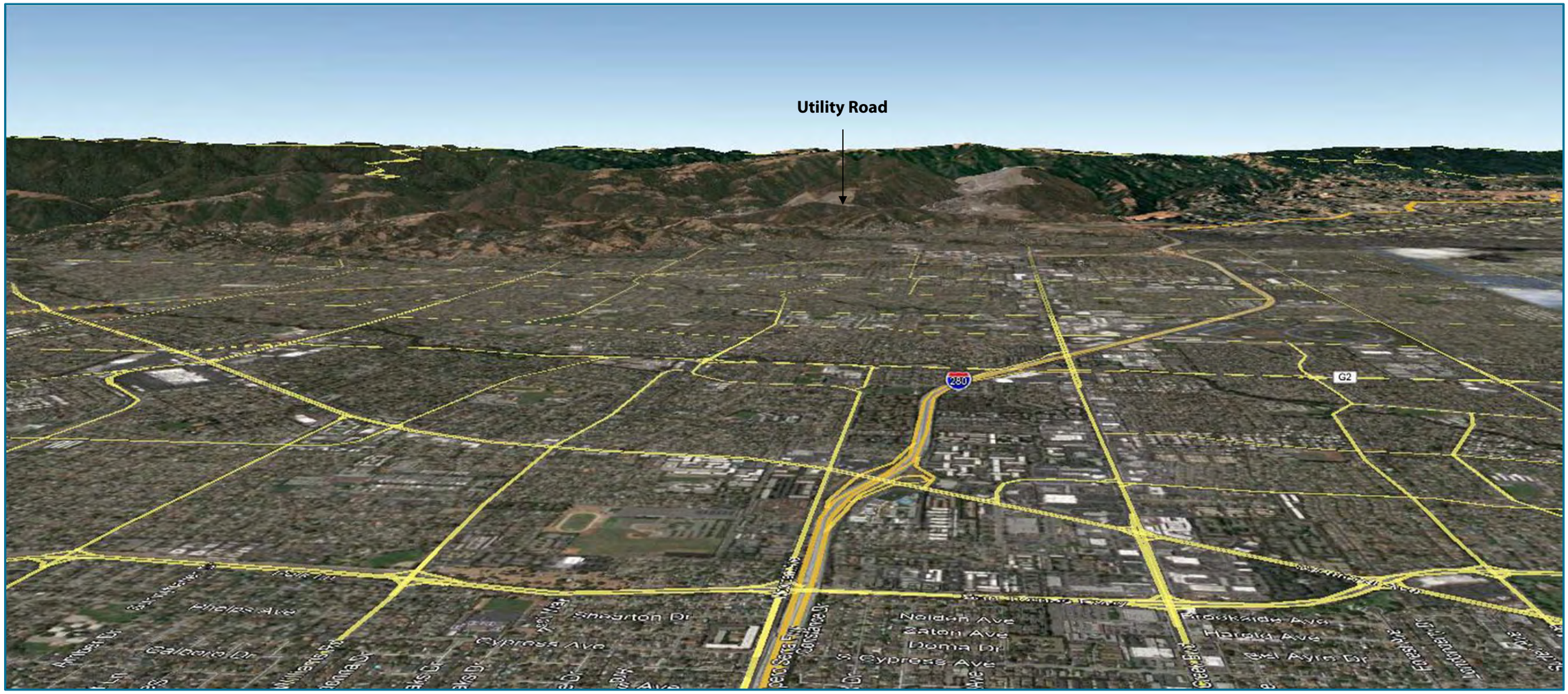
Views of the utility road from the surrounding area are not readily available. One location was found that does offer a glimpse of the road; however, this view is from a location with low travel volumes and includes surrounding disturbance on the hillsides from both Stevens Creek Quarry and Permanente Quarry. This portion of the road would likely be less visible after the side slope is vegetated to control erosion and would not likely be visible after reclamation of the upper slope of the road is completed.

# FIGURES



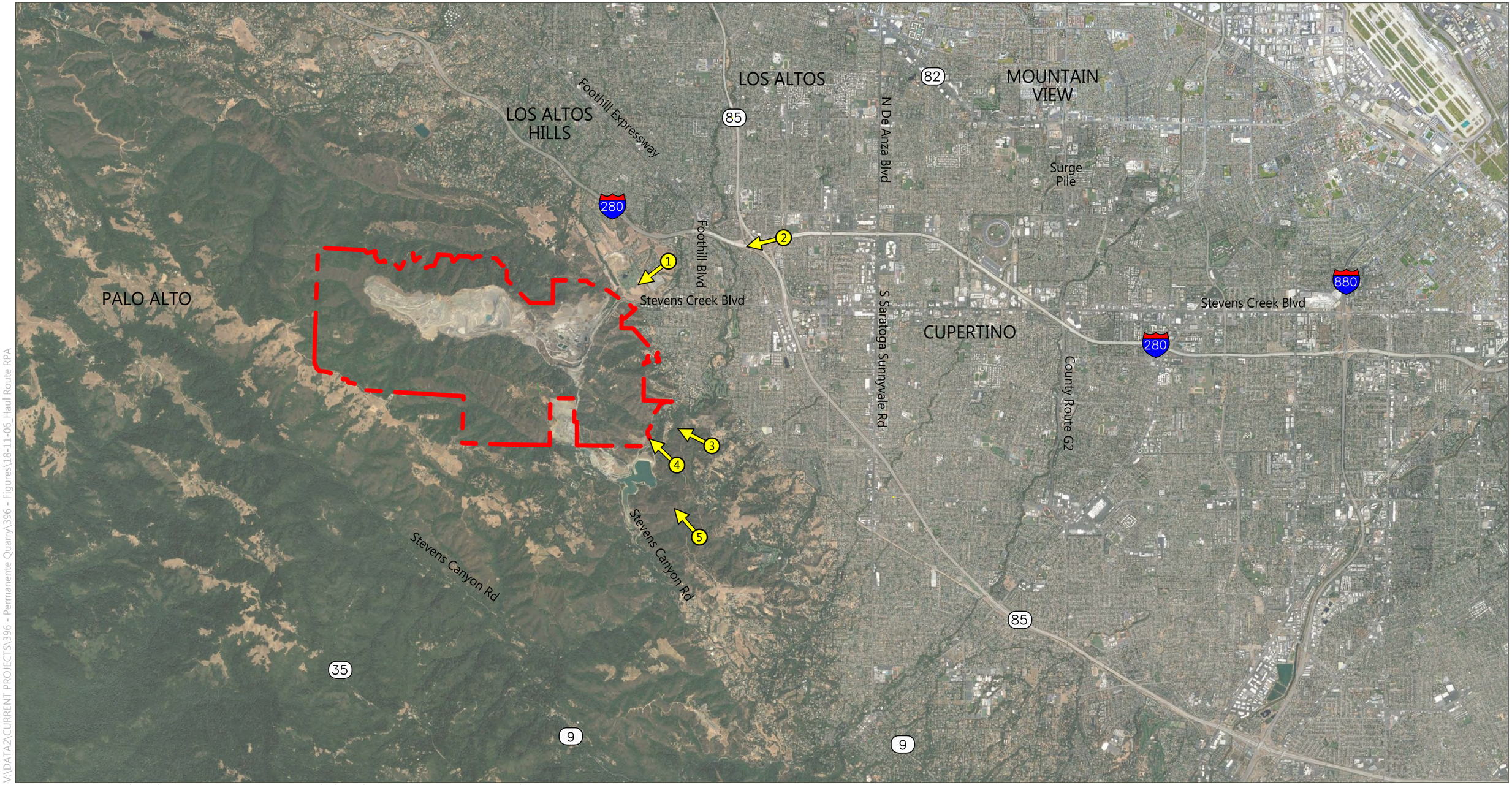

BENCHMARK RESOURCES

**Aerial of Haul Road and Surrounding Topography**
PERMANENTE QUARRY UTILITY ROAD VISIBILITY ASSESSMENT
**Figure 1**




BENCHMARK RESOURCES

**Oblique of Haul Road and Surrounding Topography**
PERMANENTE QUARRY UTILITY ROAD VISIBILITY ASSESSMENT
**Figure 2**




V:\DATA2\CURRENT PROJECTS\396 - Permanente Quarry\396 - Figures\18-11-06_Haul Route RPA

SOURCES: AERIAL: Google Earth (2018-08-09); SITE BOUNDARY: Lehigh Southwest Cement Company, generated in 2018; compiled by Benchmark Resources in 2019

Property Boundary

1 Viewpoint Location, Number, and Direction

BENCHMARK RESOURCES

N

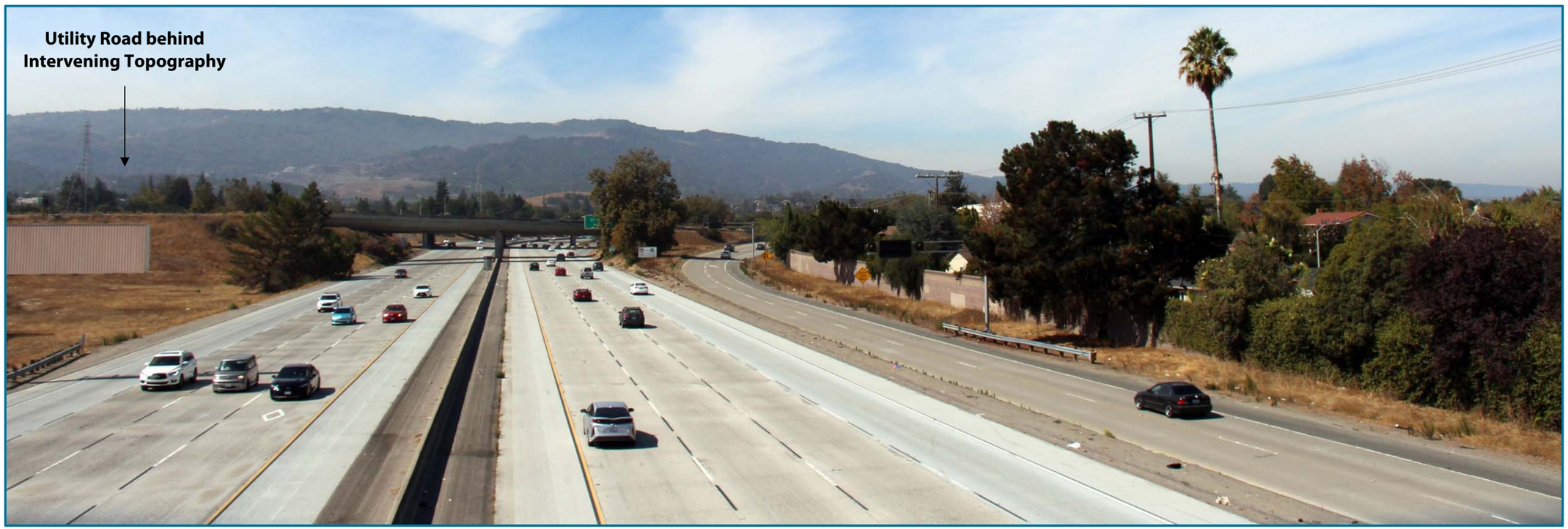
0 1/2 1 2 Miles

**Viewpoint Locations**

PERMANENTE QUARRY HAUL ROAD VISIBILITY ASSESSMENT

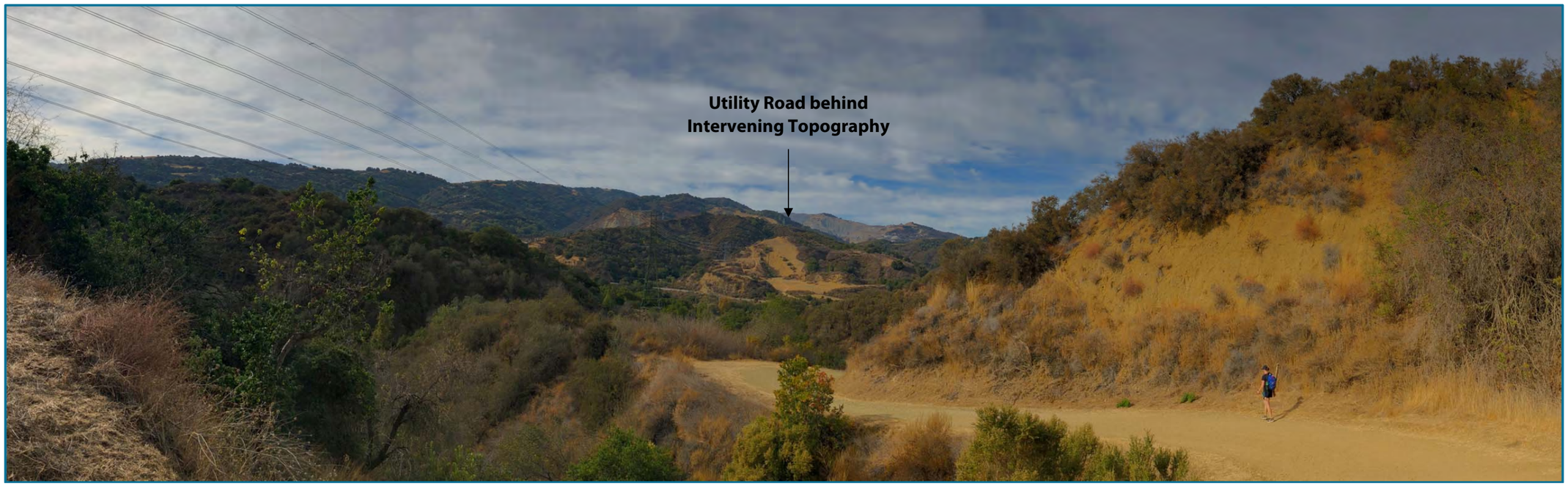
**Figure 3**


**VIEWPOINT 1:** RANCHO SAN ANTONIO COUNTY PARK, FROM ANZA KNOLL LOOKING SOUTHWEST




**VIEWPOINT 2:** MARY AVENUE BICYCLE FOOTBRIDGE OVER INTERSTATE 280 LOOKING WEST


**VIEWPOINT 3:** CANYON VIEW CIRCLE LOOKING NORTHWEST




**VIEWPOINT 4:** COYOTE RIDGE TRAIL (FREMONT OLDER OPEN SPACE PRESERVE)


**VIEWPOINT 5:** MAISIE'S PEAK (FREMONT OLDER OPEN SPACE PRESERVE)

BENCHMARK RESOURCES

**Existing Conditions Viewpoints**
PERMANENTE QUARRY UTILITY ROAD VISIBILITY ASSESSMENT
**Figure 4** (page 3 of 3)