



City of Saratoga

Quarry Park – Sanborn Connector Trail

Initial Study/Mitigated Negative Declaration

May 17, 2019

PUBLIC REVIEW DRAFT
State Clearinghouse No. #XXXX-XX-XXXX

Quarry Park – Sanborn County Park Connector Initial Study

TABLE OF CONTENTS

PROJECT DESCRIPTION.....	1
INITIAL STUDY CHECKLIST.....	20
ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED	21
ENVIRONMENTAL CHECKLIST	23
I. AESTHETICS.....	23
II. AGRICULTURE AND FORESTRY RESOURCES	25
III. AIR QUALITY	27
IV. BIOLOGICAL RESOURCES	32
V. CULTURAL RESOURCES	48
VI. GEOLOGY AND SOILS	50
VII. GREENHOUSE GAS EMISSIONS.....	54
VIII. HAZARDS AND HAZARDOUS MATERIALS	55
IX. HYDROLOGY AND WATER QUALITY.....	58
X. LAND USE.....	62
XI. MINERAL RESOURCES	64
XII. NOISE.....	65
XIII. POPULATION AND HOUSING.....	72
XIV. PUBLIC SERVICES	73
XV. RECREATION	74
XVI. TRANSPORTATION/TRAFFIC	75
XVII. UTILITIES & SERVICE SYSTEMS.....	78
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.....	80

Attachments

Attachment A: Biological Resources Background Report

Attachment B: Engineering Geologic and Geotechnical Study

List of Figures

Figure 1	Regional Location.....	5
Figure 2	Project Vicinity A	6
Figure 3	Project Vicinity B	7
Figure 4	Circulation.....	17

PROJECT DESCRIPTION

The Project would construct an approximately 3.0 mile public recreational trail connection from Saratoga Quarry Park to Sanborn County Park in western Santa Clara County (“connector trail”) or (“trail”). The proposed Project would occur on City-owned and privately-owned land within the project site. See Figure 1. The trail is envisioned to eventually connect to existing County trails within Sanborn County Park and to serve as part of a trail system linking trails in Saratoga to the Skyline-to-the-Sea Trail to form a Saratoga-to-the-Sea trail. The Saratoga-to-the-Sea trail is included as a proposed trail in the City of Saratoga General Plan in Circulation and Scenic Highway Element and also in Open Space and Conservation Element. The proposed alignment for the trail was selected based on a feasibility study conducted in May 2015 and based on input from City staff, the City’s Trails Advisory Committee, the San Jose Water Company, the Santa Clara County Parks and Recreation Department staff, and the Midpeninsula Regional Open Space District staff. The trail would be accessible to the public for pedestrian use and horseback riding.

This Initial Study/Mitigated Negative Declaration analyzes a trail to be constructed along the preliminary alignment as flagged and mapped. A qualified specialist in trail design and construction, with input from a licensed engineering geologist and civil engineer as needed, will delineate the final trail alignment, prepare construction documents, and oversee trail construction.

This document provides an assessment of the potential environmental impacts caused by the physical changes resulting from the Project.

A. Regional and Local Setting

The Project area is located in western Santa Clara County approximately 50 miles south of San Francisco and 27 miles east of the City of Santa Cruz (see Figure 1, Regional Location, and Figure 2, Project Vicinity). The Project area is located on the south side of Saratoga Creek and Highway 9, primarily within the lower Congress Springs Creek drainage (Figure 2). (Congress Springs Creek is a tributary to Saratoga Creek.) The Project area would be implemented primarily on Assessor Parcel Number 503-73-003 (SJWC), with segments crossing through 517-04-011, 517-04-060, 517-04-061, 517-32-001, and 503-48-045 and is bordered on the north by San Jose Water Company lands and California State Route (SR) 9, to the east by Saratoga’s Quarry Park, to the south by San Jose Water Company lands, and to the west by privately held parcels and Sanborn County Park.

B. Existing Site Character

The project area is located on the northern flank of the Santa Cruz Mountains. The area is characterized by steep mountainous terrain dissected by narrow, steep sided V-shaped ravines and stream valleys. Natural slopes range from less than 20 percent gradient along gently sloping ridgetops and midslope benches to more than 80 percent along local steep

streamside slopes and steep headwall swales. Hillsides are underlain by a series of large-scale deep-seated bedrock landslides, several of which appear periodically active. The steep slopes that characterize much of the area are also subject to shallow debris slide and debris flow landslide processes. Small debris fans are found at the mouths of many of the steep drainages. The area is geologically active, dominated by the northwest-southeast trending San Andreas Fault Zone located about 1.5 miles southwest of the project area. Broad alluvial sediments are found along the valley bottoms of Congress Springs and Saratoga Creeks. Elevations range from 620 feet along Saratoga Creek to over 2,000 feet along the ridge top.

Several streams that may be subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) and the California Department of Fish and Wildlife (CDFW) and the Regional Water Quality Control Board (RWQCB) traverse the project area. Vegetation in the project area is primarily oak woodlands and chaparral local conifer forest found locally along the valley bottoms of the larger watercourses.

The majority of the property is undeveloped although portions of the trail at each terminus would be located along developed trails and roads.

C. Policy Setting

The Project would be undertaken by the City of Saratoga as part of a collaborative effort with Santa Clara County and the Midpeninsula Regional Open Space District.

1. County

Santa Clara County General Plan and County of Santa Clara Zoning Ordinance Code

The Project site is designated as Hillsides in the County General Plan and zoned HS Hillside in the County Zoning Code. Under Section 2.20.010(C) of the Zoning Ordinance, the purpose of the Hillside district, also known as the HS district, is to preserve mountainous lands unplanned or unsuited for urban development primarily in open space and to promote those uses which support and enhance a rural character, which protect and promote wise use of natural resources, and which avoid the risks imposed by natural hazards found in these areas.

Within the HS District, permitted uses include agriculture and grazing, very low-density residential use, low density, low intensity recreation, mineral and other resource extraction, and land in its natural state.

The Project does not require any approvals from Santa Clara County.

Santa Clara County Countywide Trails Master Plan

The Santa Clara County Countywide Trails Master Plan (“Trails Master Plan”) identifies a proposed connection from Saratoga to County parklands via private lands.

The Trails Master Plan provides design and management guidelines for construction of new trails implemented by the County.

Santa Clara Valley Guidelines & Standards for Land Use Near Streams User Manual

In 2006, the Santa Clara Valley Water Resources Protection Collaborative, made up of representatives from the Santa Clara Valley Water District, 15 cities, the county, business, agriculture, streamside property owner and environmental interests adopted the Guidelines & Standards for Land Use near Streams. The Santa Clara Valley Water Resources Protection Collaborative published a User Manual containing tools, standards, and procedures for the protection of streams and streamside resources in the county. The guidelines and standards fall within the following activity headings:

- ◆ Riparian Corridor Protection
- ◆ Bank Stability/Streambed Conditions
- ◆ Encroachments between the Top of Bank
- ◆ Erosion Prevention and Repair
- ◆ Grading
- ◆ Outfalls, Pump Stations, and Site Drainage
- ◆ Channelization
- ◆ Utility Encroachments
- ◆ Trail Construction
- ◆ Septic Systems
- ◆ Trash Control and Removal
- ◆ Protection of Water Quality
- ◆ Groundwater Protection
- ◆ Flood Protection

In 2007, the County of Santa Clara Board of Supervisors adopted a resolution approving the Guidelines & Standards as a document to be used during the design and construction of County projects. These Guidelines and Standards apply only to County projects.¹

Midpeninsula Regional Open Space District

The Midpeninsula Regional Open Space District (MROSD) is a non-enterprise special district that serves parts of Santa Clara, San Mateo, and Santa Cruz counties in order to form a continuous greenbelt of permanently preserved open space by linking public parklands. As a member of Bay Area Open Space Council, the MROSD participates in cooperative efforts, including Bay Trail, Bay Area Ridge Trail, and Skyline-to-the-Sea Trail, which are regional Bay Area trails running across the District's jurisdiction. The MROSD's basic policy document includes goals and policies that relate to open space

¹ Santa Clara County Countywide Trails Master Plan at 59.

land preservation and management, inter-agency relationships, and public involvement. MROSD's Saratoga Gap and Fremont Older Open Space Preserves are located in the vicinity of Saratoga.

Funding for this Project is a shared effort between the City and MROSD, and primarily comes from MROSD's Measure AA bond approved by voters in 2014, in Portfolio #18: South Bay Foothills: Saratoga-to-Sea Trail and Wildlife Corridor of the Measure AA bond ordinance, which includes \$1.365 million to "protect wildlife corridor along Highway 9" and "connect trail to Saratoga-to-Sea Trail and Skyline-to-Sea Trail."

MROSD has adopted District Trail Construction and Maintenance Guidelines ("MROSD Guidelines," attached as Appendix A) which call for trail design practices such as minimizing erosion, incorporating proper and efficient runoff, designing stream crossings to minimize disturbance and avoid flood elevations, and to implement construction to minimize impacts to sensitive natural resources. Per the Partnership Agreement between the City and MROSD, executed in 2018, the MROSD Guidelines will be used in designing and building the Project.

Figure 1 Regional Location

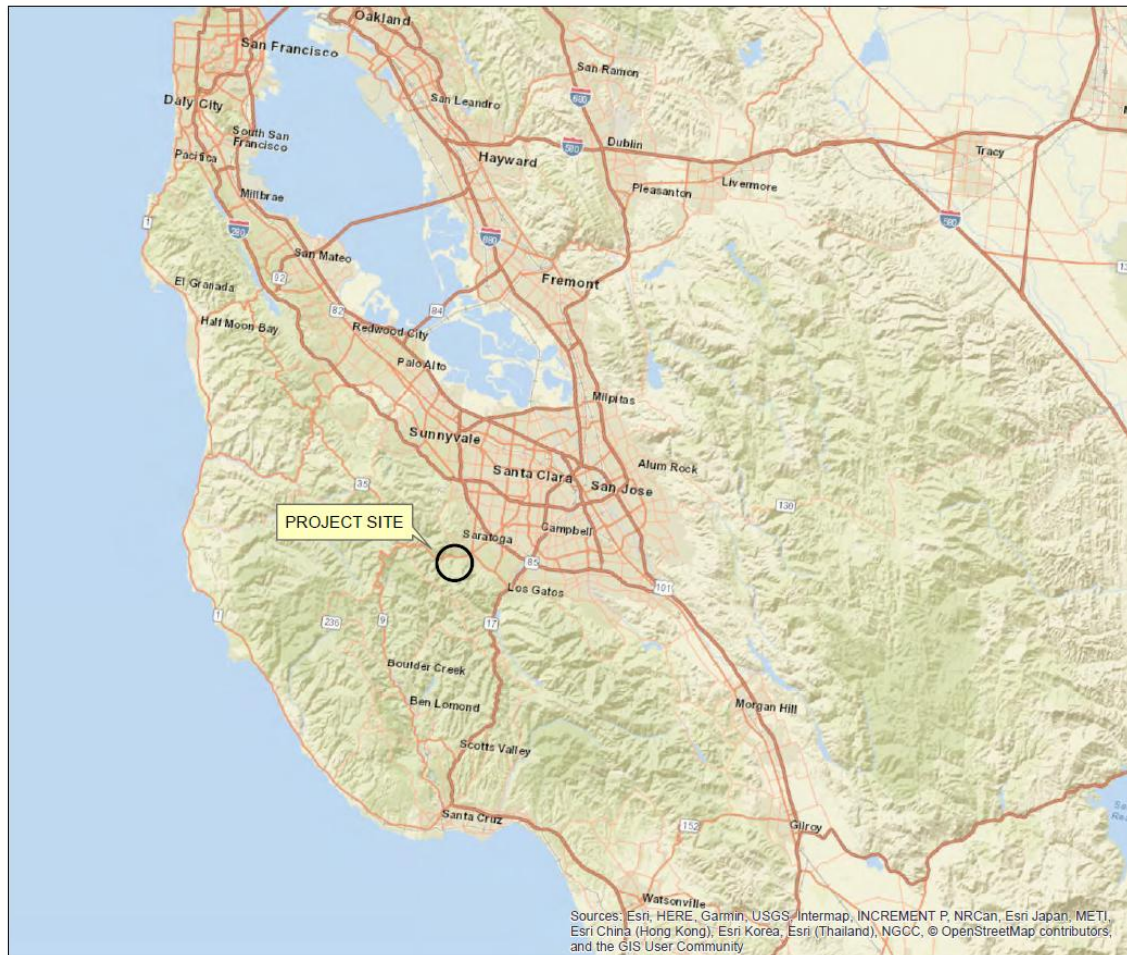


Figure 2 Project Vicinity A

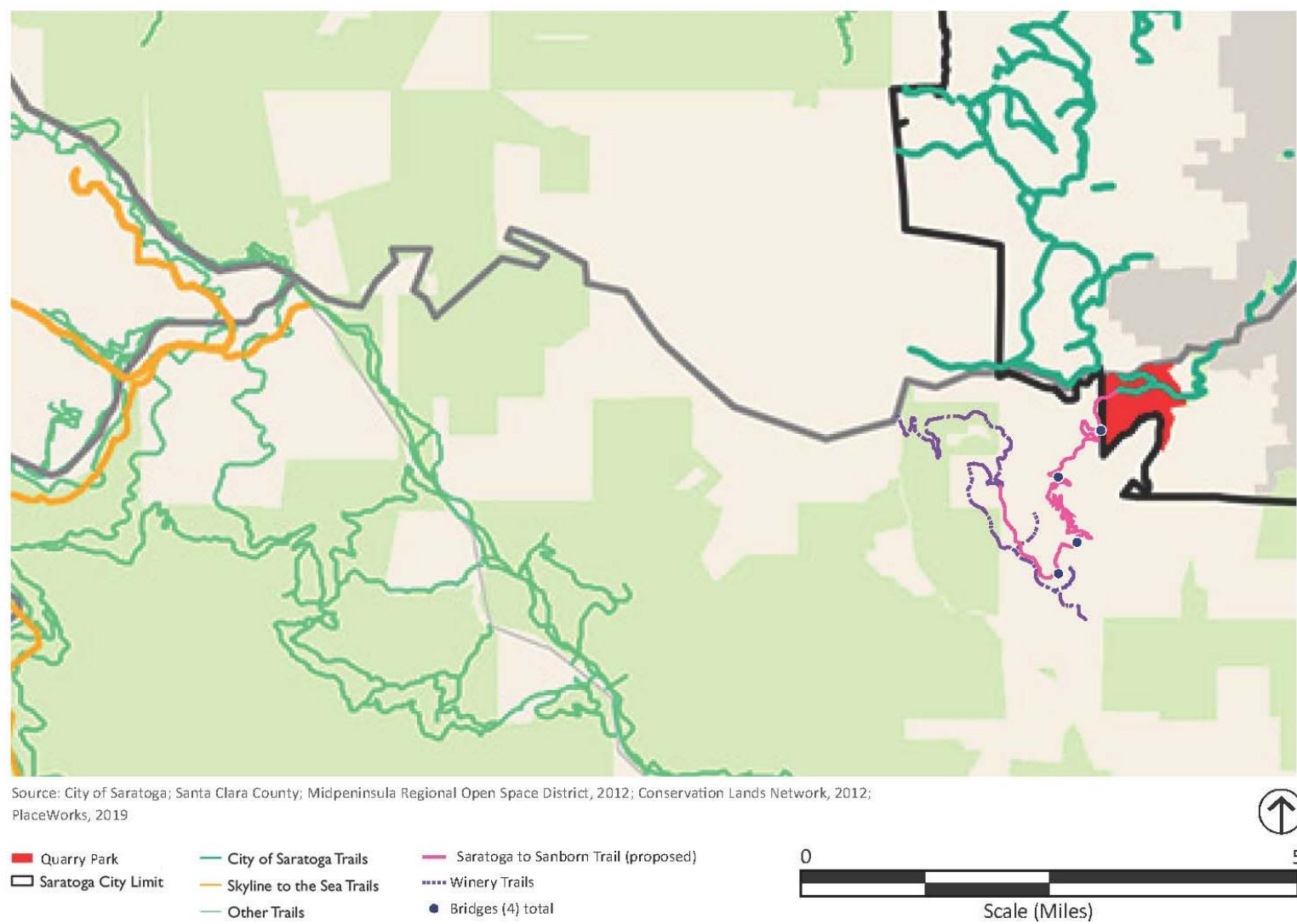
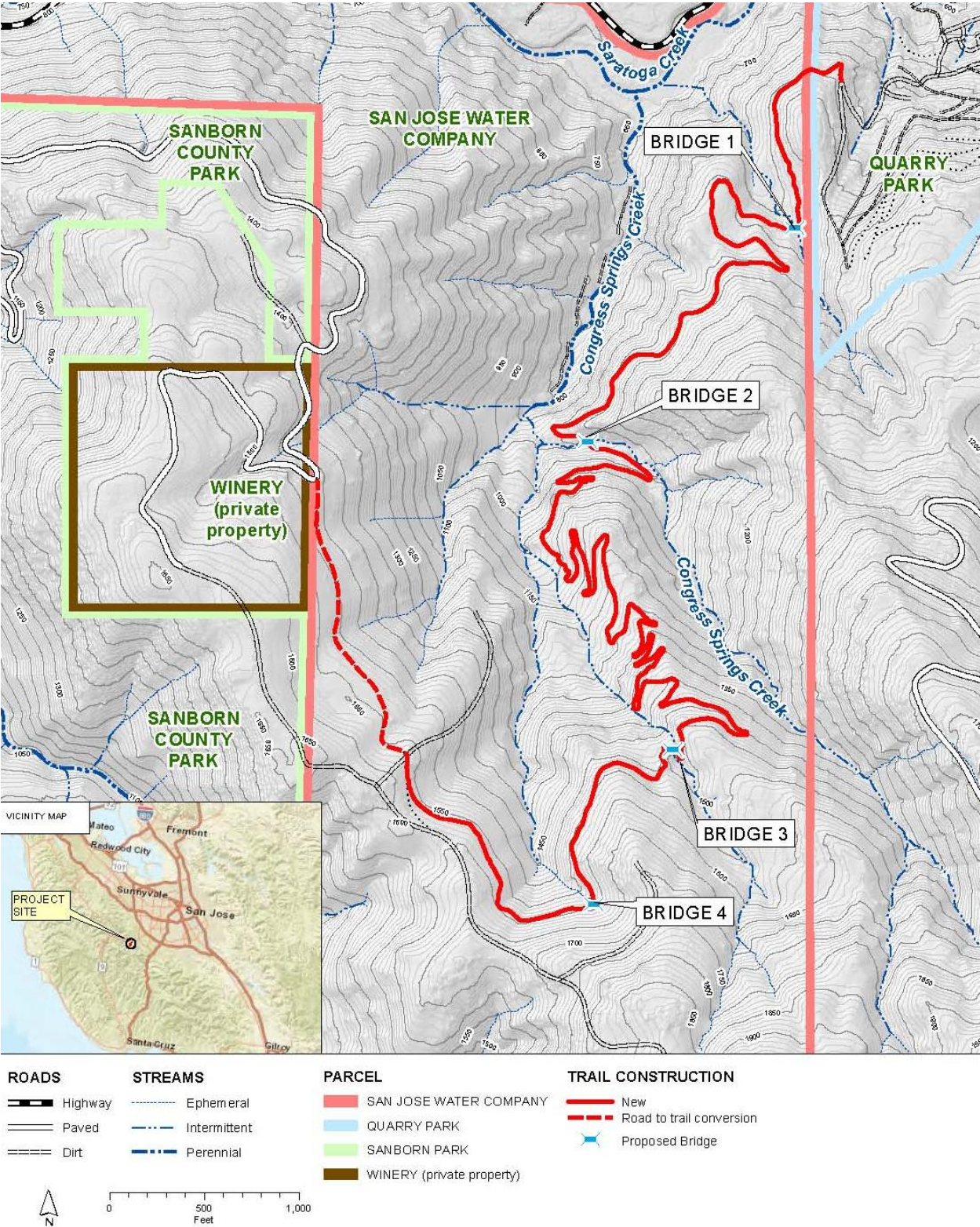


Figure 3 Project Vicinity B



2. City

a. City Of Saratoga General Plan and Land Use Element

The City General Plan designates the project area, which is located primarily within the City's Sphere of Influence (SOI) but not the city limits, as Hillside Open Space (OS-H). Because these lands are outside the City limits, the County planning and zoning laws would apply. The OS-H designation would apply should the area ever be annexed to the City.

The Hillside Open Space designation allows uses which support and enhance a rural character, promote the wise use of natural resources and avoid natural hazards. Uses include agriculture, mineral extraction, parks and low intensity recreational facilities, land in its natural state, wildlife refuges and very low intensity residential development.

A small portion of the project area is located within the City limits in the Quarry Park. This land is designated Open Space-Outdoor Recreation. That designation applies to City or County parks Only recreational facilities (i.e. playground equipment, recreational courts, etc.), structures necessary to support the parks or structures of particular historic value are permitted in these areas.

i. *Open Space and Conservation Element*

The Open Space and Conservation Element document describes the existing parks and open space resources in the City of Saratoga. Additionally, it describes the City's goal to maintain and increase the amount of parkland and recreational areas according to its park standard of 5 acres per 1,000 residents. The Open Space and Conservation Element also includes a map of existing trail easements and proposed trails, which includes a conceptual trail connecting Quarry Park to Sanborn County Park. Open Space and Conservation Element, Exhibit OSC-2, at p. 10.

ii. *Circulation and Scenic Highway Element*

The City of Saratoga's Circulation and Scenic Highway Element includes policies to: (1) improve transportation options for multiple users; (2) promote a healthy and active community for residents by providing alternative transportation opportunities for bicyclists and pedestrians; and (3) have the City be a responsible partner in developing regional transportation solutions. The Circulation Element supports implementation of trails to link the population centers in Saratoga to the scenic and open space resources available in the Santa Cruz Mountains.

b. Saratoga Municipal Code

i. *Zoning (Chapter 15)*

The Zoning chapter of the Saratoga Municipal Code serves to implement the General Plan designations described above. It defines zones and contains the zoning map and development standards for all zones. The Project site is pre-zoned R-OS (Residential

Open Space). According to the Section 15-02.010, the purpose of the R-OS zone is “[t]o preserve hillside and mountainous land in its natural condition through the establishment of dedicated open space areas, and through environmentally sensitive low density residential use” and “[t]o promote those uses which support and enhance a rural character and preserve important resources such as forests, natural vegetation, watersheds, animal habitat, scenic beauty, recreational areas, open space and public access thereto.” One of the permitted uses within the R-OS zone is related to public park uses, which allows for public parks, trails, and open space. As with the OS-H designation, these rules would apply to the land currently outside the City limits in the event of annexation.

ii. Parks and Recreation (Chapter 11)

The Park and Recreation chapter of Saratoga’s Municipal Code defines acceptable and prohibited activities within City parks and recreational facilities. The chapter sets forth general regulations and permit requirements for special recreation activities, including sports and group uses. In order to preserve and prevent incidents of fire and loss of parkland, the chapter specifically states that use of tobacco is prohibited in recreational areas, which are defined as any outdoor area that is open to the public for recreational purposes. This includes parks and trails.

c. Quarry Park Master Plan

The Quarry Park Master Plan prepared in 2014 provides a plan and policies to guide development of the City’s Quarry Park. The Master Plan includes renovation of Quarry Park’s hiking trails to become part of a greater regional trail network and specifically part of the future Saratoga-to-the-Sea Trail (currently the Skyline-to-the-Sea Trail). The Master Plan envisioned a future trail from the Quarry Park site to connect west through the San Jose Water Company property to the trails at Sanborn County Park, and ultimately to the existing Skyline-to-the-Sea Trail. The Project will be designed, built, and operated in accord with all applicable Quarry Park Master Plan policies.

D. Project Characteristics

1. Trails.

As described above, implementation of the proposed project would result in the development of a public multi-use trail extending from Quarry Park, west through the San Jose Water Company property and end at a road on private property. Ultimately, the goal is for the project connect to new and existing trails in Sanborn County Park leading to the existing Skyline-to-the-Sea Trail. The proposed project connector trail would be developed as a multi-use facility, emphasizing the Project site’s natural features, connections to adjacent open space, and opportunities for hiking and horse-back riding.

The Project would provide approximately 2.7 miles of new trail. The remainder of the connector trail (which would traverse an existing unpaved road that provides the main access to a private winery) is currently being constructed. Length of trail by type and property is summarized in the table below.

City of Saratoga
Quarry Park-Sanborn County Park Connector Initial Study
Project Description

PROPERTY	TRAIL TYPE			TOTAL LENGTH
	New Trail	Abandoned dirt road	Paved road (Winery Access)	
San Jose Water Company	2.7	0.3	0.22	3.22
Winery (private)	0	0	0.12	0.12
Sanborn County Park	0	0	0.03	0.03
Quarry Park	0.05	0	0	0.05
TOTAL LENGTH (miles)	2.7	.3	0.37	3.37

The proposed project would include a 4- to 5-foot-wide compacted earth trail for the newly constructed portion of the trail in the wooded area. The proposed trail would be designed, constructed, and operated in accordance with all applicable Quarry Park Master Plan policies and consistent with the guidelines outlined in the MROSD's District Trail Construction and Maintenance Guidelines. The trail design will: conform to and incorporate the natural terrain; avoid long, straight reaches; incorporate out-slopes of 3-5 percent; incorporate frequent reverse grade dips; and incorporate climbing turns at switchbacks to the extent feasible. The approximate trail grade will range between 0 and 15 percent with several short steeper segments. The average trail grade is expected to be about 8% with an overall elevation gain of approximately 625 feet. Construction of the trail would include implementation of small wood retaining walls, four clear span bridges at stream crossings (described in more detail below), and replanting of trees and revegetation along the trail as needed in conformance with resource agency requirements. The trail would be inspected by City staff before winter rains and as needed throughout the year to evaluate maintenance needs.

Trail design and construction will utilize the following techniques, in accordance with the detailed specifications in the Engineering Geologic and Geotechnical Investigation for the Project (attached as Appendix B), to stabilize the slope, provide a safe and accessible travel path, and optimize views:

Partial Bench Construction. Most of the trail, approximately 10,275 feet, will be partial bench cut construction, which uses excavated soil from the hillside to construct the outer edge of the trail. This approach balances cut and fill within the trail section and is typically applied where slope gradients are less than 50%.

Cut Bench Construction. Approximately 2,305 linear feet of trail will be full cut bench construction. A cut bench design cuts the full width of the trail into the hillside with excess soil being spread onsite below the trail. Structural fill is added to the trail tread at a depth no greater than six inches. This approach is typically applied where slope gradients are greater than 50%. Because of the steeper slopes it generally requires more excavation and leaves a greater backslope than partial bench construction but for comparative slopes creates a trail bed that is more durable and requires less maintenance.

Fill Bench Construction. Approximately 230 linear feet of trail will be fill bench construction. Fill bench construction includes the import of compacted fill with no cut to create the trail thread.

Rock Fill Bench Construction. Approximately 365 linear feet of trail will be rock fill bench construction. Rock fill construction is similar to partial and fill bench construction; however, rock is used for fill instead of soil.

Trail construction would begin at the eastern terminus at Quarry Park and end at the boundary of the private winery at the western boundary of the Project site. Extension of the trail is envisioned to connect with the County easement over the existing service road that traverses the winery, cross into Sanborn County Park lands, back through San Jose Water Company lands and connect to the Sanborn County Park boundary.

Access to the proposed connector trail would be from Quarry Park on the east and from Sanborn County Park on the west. The existing trails in Sanborn County Park in the vicinity of the western terminus of the connector are currently being upgraded by the County as a separate project.

Construction and public use of the 3.22 miles of trail located on San Jose Water Company property will occur pursuant to a public trail easement. The easement grants the City of Saratoga the right to design, locate, relocate, construct, reconstruct, repair, preserve, maintain, and replace, the trail and trail improvements within the easement area. The easement conditions the final designation of the trail alignment on the City's completion of environmental review pursuant to the California Environmental Quality Act. The easement permits the public to use the trail for walking, jogging, horseback riding, and other related recreational uses.

Due to steep grades and other geographic constraints, the majority of the proposed trail would not be ADA accessible. Trail accessibility information, would be posted on all trail signage as well as Quarry Park's circulation map and Sanborn County Park's circulation map.

2. Retaining Walls and Switchbacks

The trail will also consist of 955 linear feet of low retaining walls, composed of either stacked rock, wood lag, wood crib, or Allen blocks. It is anticipated that the retaining walls will be between one and two and a half feet tall and will be used to support trail prism, bring the grade to a desired percentage, and keep people on the trail. Additional short retaining walls may be required based on conditions encountered during construct.

The Project includes 18 switchbacks, or climbing turns. Of these, seven are anticipated to have downslope reinforcement of the trail tread. Two switchbacks are anticipated to utilize rock or Allen block supports and five will utilize rock filled buttress; however, the construction technique may vary based on the contractor's preferred approach.

3. Trail Bridges

In addition to the trail work, there would be four new trail bridges crossing intermittent and ephemeral watercourses. Their locations are identified in Figure 3.

BRIDGE 1: Anticipated dimensions for Bridge 1 are 35 feet long by 6 feet wide. Bridge 1 would be a steel stringer bridge with wood deck and railing and concrete abutments and would be constructed in place.

BRIDGE 2: Anticipated dimensions for Bridge 2 are 70 feet long by 6 feet wide and it would be a prefabricated steel or fiberglass truss and concrete abutments.

BRIDGE 3: Anticipated dimensions for Bridge 3 are 50 feet long by 6 feet wide. Bridge 3 would be a steel stringer bridge with wood deck and railing and concrete abutments and it would be constructed in place.

BRIDGE 4: Anticipated dimensions for Bridge 4 are 20 feet long by 6 feet wide. Bridge 4 would be a glulam or steel stringer bridge with wood deck and railing and concrete abutments. It would be constructed in place.

Trail bridge abutments have been designed to avoid environmentally sensitive areas wherever possible.

4. Furnishings and Signage

The Project would include a small trailhead with a bench, trail map sign, and fence at the Saratoga Quarry Park. There would also be approximately eight benches along the trail route at strategic locations for rest stops or viewpoints. Wayfinding signs would be located at the intersection between the new trail construction and converted old road and at the private winery roadway that connects to Congress Springs Road.

5. Ground Preparation and Vegetation Removal

The proposed Project's disturbed area covers approximately six acres, including area for the trail, as well as construction staging and material movement. When available, rocks present along the trail will be utilized in construction of retaining walls, downslope reinforcement, and rock fill bench trail construction. It is estimated that 2,000 cubic yards of rock and soil will be excavated from the site and used as fill in designated areas along the trail and approximately 100 cubic yards of rock will be imported. However, excavation volumes may differ based on conditions encountered during crossing and fill removal.

The Project requires clearing and grubbing of the trail alignment area and removal of some trees as described below:

<i>Approximate diameter at breast height (dbh)</i>	<i>Number of trees to be removed</i>
8"	21
10"	25
12"	14
16"	1
18"	5
20"	1
32" (failing health)	1

The trees identified for removal would be left in place.

In addition, the Project would require removal of approximately 5 to 12 wood rat nests that may be impacted by trail construction.

6. Construction.

Construction of the proposed trail would be undertaken from Quarry Park and would extend over a period of 18 - 24 months. Construction is anticipated to take place during the winter, which would shorten the construction window and minimize active construction when vegetation, including poison oak, is most dense. Erosion control strategies for managing construction during the winter, rainy months are described in section below. The following equipment is anticipated to be used for construction: mini-excavator(s), mini dozer, motorized tote/wheelbarrow, ATV with trailer, chainsaw, hand tools, portable mixer, and tree rigging.

Some materials for construction of the bridges may need to be flown in via helicopter. If helicopter use is necessary, a landing zone on the abandoned service road along the ridge will be designated as a staging area for a helicopter pick-up point. Materials would be flown to drop-off areas located in existing clearings through existing openings in the tree canopy. The drop-off areas may require removal of one tree less than 12 inches in diameter and minor pruning of tree limbs.

Minimal grading and excavation will occur as part of development of the proposed trail. Ground disturbance to construct the trail will generally extend to a maximum of 24 inches below ground surface for cuts along the trail, a maximum of four to six feet for cuts at some switchbacks, and several feet at retaining walls and bridge abutments. Grading will be designed so that runoff is shed off the trail as quickly as possible using a combination of out-sloping of the trail and frequent grade reversals (drainage dips). No large construction vehicles will be used in the riparian area.

It is anticipated that there will be four construction staging areas off-trail and two along the trail route. The off-trail staging areas will be used for contractor crew parking and storage of equipment, such as bridge materials, concrete, water, wood, tools, and

chainsaws. On-trail staging will be used for organization and storage of equipment. The anticipated staging areas include:

- Staging Area 1: This staging area will be located at Saratoga Quarry Park at the eastern terminus of the trail and will utilize the existing roads, turnouts and parking areas within the park. The upper parking lot would provide parking for construction crew vehicles and storage areas for equipment and materials. The upper parking lot is currently an unpaved gravel surface area that is not open for use by the public. The parking lot would require only minor improvements to ensure proper drainage (i.e., a silt fence would be placed around the northern perimeter of the parking area to capture silt).
- Staging Area 2: This staging area will be located at the intersection of the private winery roadway and the old unused and overgrown road to be converted to trail use. It will utilize the broad turnout along the private winery roadway, which is an existing rocked roadway.
- Staging Area 3: This staging area will be located near the intersection of the water district service road (located along the ridge top) and a PG&E tower access road. It will utilize existing turnouts along both dirt roads. For winter staging, rock aggregate will be placed to fortify and stabilize road access and the staging area as needed.
- Staging Area 4: This staging area will be located at the end of a second PG&E tower access road. It will utilize turnouts along the existing dirt road. Access to the trail will be by foot down a moderately steep slope following the powerlines. This staging area will only be used shorten access for the delivery of bridge materials to Bridge 3 and 4 and will not be used during winter.
- Trail Staging: Newly constructed segments of trail will be utilized for staging as construction progresses.

Local traffic on streets in the vicinity of the project site will increase incrementally due to construction personnel driving to the staging areas in the Quarry Park and Sanborn Park. The project is expected to require less than 25 construction personnel.

7. Drainage.

A Storm Water Pollution Prevention Plan (SWPPP) will be implemented on the project site during the construction period. The SWPPP will ensure that soil erosion is minimized, hazardous construction materials are adequately contained, and sediment and synthetic contaminants do not enter creek channels.

The project will incorporate all mitigation measures proposed in this Initial Study/Mitigated Negative Declaration.

8. Erosion Control

Approximately 200 linear feet of trail would be under construction at any given time with permanent grading and erosion control installed as trail construction progresses. Permanent erosion control measures would include installation of frequent drain dips to prevent concentration of trail runoff, as well as slash packing and mulch to treat exposed soils outside of the trail tread.

As noted above, winter construction is anticipated for the project. Any grading for the Project after October 1 would be completed in dry weather or low rainfall (less than ½ inch per 24 hour period). A minimum of 200 linear feet of straw wattle and erosion control blankets would be available at staging area or on site at all times. In the event of 25 percent chance of forecast inclement weather (greater than ½ inch of rainfall in 24 hour period), temporary erosion control measures (e.g. straw wattles, silt fence, erosion control blankets, etc) would be installed to protect the section of trail that is currently under construction.

9. Plant and Trail Maintenance.

Existing vegetation, especially native trees and shrubs, will be preserved where possible. The Project will include removal or pruning of some riparian trees and tree limbs adjacent to the trail alignment and near staging areas. Tree removal is described in section 5 above.

The proposed trail will be maintained by the City of Saratoga. In addition, because the trail would be located on steep slopes, the trail would require additional maintenance as prescribed by the engineering geologist.

10. Fire Prevention

To reduce the risk of fire within the Project, the contractor shall have appropriate and required fire suppression equipment onsite conforming to pertinent City of Saratoga and California Department of Forestry and Fire (CAL FIRE) requirements. This is anticipated to include a fire box with three shovels, axe, Pulaski, chain saw and backpack pump (or bladder bag). The fire box shall be stored in a separate box that will remain locked but accessible on the construction site.

E. Circulation, Access, and Parking

As discussed above, access to the proposed trail would be through Quarry Park on the east and through Sanborn County Park on the west. Implementation of the project will marginally increase demand for parking in the parking lots in Quarry Park and in Sanborn County Park, consistent with the anticipated increase in trail users after development of the trail. While the entire trail is approximately 3 miles, it is assumed that most visitors will take shorter hikes due to the steepness of the trail. The trail from Saratoga Quarry Park to Bridge 2 requires less strenuous climbing, and Bridge 2 is a picturesque

destination. Round trip, this trip is approximately 1.7 miles. It is estimated that the Project could generate approximately 88 trail users on a typical weekend day and 12 trail users on a typical week day.²

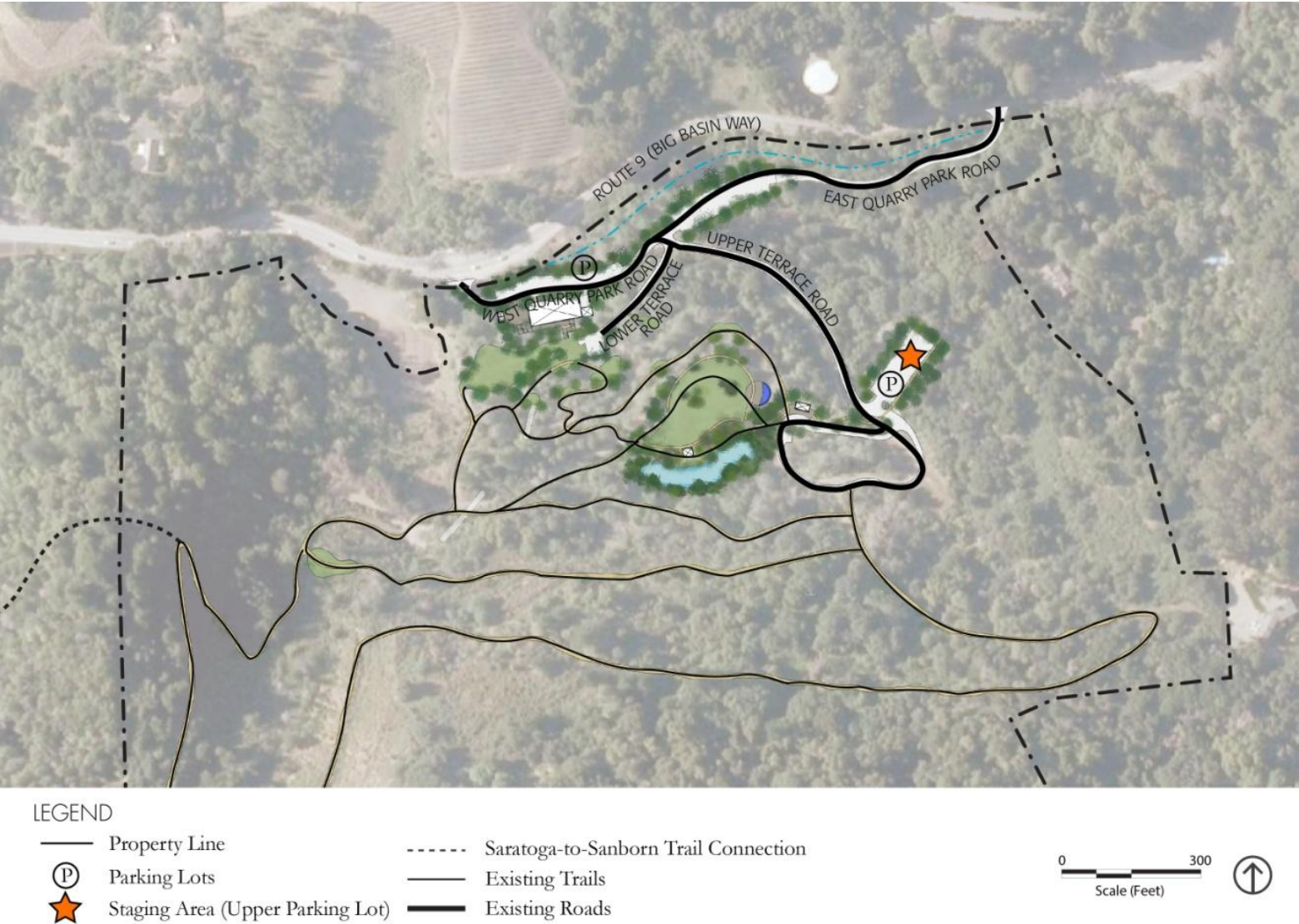
Parking is available at both Quarry Park and Sanborn County Park and is anticipated to be adequate to accommodate a modest increase in demand. It is assumed that most trail users will park at Saratoga Quarry Park and that approximately 17 spaces could be needed for trail users.³ The current parking space is gravel with space for approximately 26 cars and one accessible parking space, which allows for enough parking for the Project. Additionally, the Master Plan for Saratoga Quarry Park proposes a total of 100 to 130 parking spaces at three different locations. If these additional parking areas are developed, parking will be sufficient even if trail use increases in the future.

There will be no parking on the western end of the Project at the private winery roadway, although trail users will be able to travel along the private winery roadway to connect to other trails or to Congress Springs Road. Sanborn County Park provides parking in multiple areas of the park. Depending on where future trail extensions link to existing trails, parking to accommodate hikers on the Quarry Park-Sanborn County Park Connector may be available in the Sequoia Group Area, in the Walden West Environmental Center area, or in newly constructed parking areas.

² Visitor estimate is based on a study of use of comparable trails in neighboring Santa Cruz County, which found that average trail use is approximately 4 visitors per mile of trail on weekdays and 29 visitors per mile of trail on weekends.

³ The parking estimate assumes 2.5 visitors per car and an average visit of 5 hours.

Figure 4 Circulation



F. Habitat Enhancements and Natural Resource Management

Habitat restoration would be focused on the riparian zone along Saratoga Creek. The dominant biotic habitats along the trail include riparian areas, chaparral, and oak woodland. Quarry Park-wide efforts involve the removal of invasive species and the revegetation of native plants in compliance with resource agency requirements.

In accordance with Chapter 7 of the Master Plan for Quarry Park, the project would adhere to natural resource management guidelines that focus on protecting and enhancing native vegetation. The Quarry Park Guidelines emphasize protecting the relatively intact areas of native vegetation, controlling and working to eradicate highly invasive exotic plants, and encouraging the spread and natural succession of native communities on the site. The Quarry Park Guidelines address the following categories:

- Riparian buffers.
- Protection of special status species habitat.
- Invasive species control.
- Revegetation.
- Erosion control

Conservation measures for preventing impacts to the area's biological resources are provided in Appendix A of the Quarry Park Master Plan.

G. Signage

The proposed Project would include provision of wayfinding signage. Wayfinding signage would be located at the trail eastern terminus within Quarry Park and at the western terminus within Sanborn County Park, and at trail intersections and would only provide directional information. In addition, hazard signage warning trail users of steep terrain and steep drop-offs next to trail will be posted along the trail as needed.

H. Project Implementation Schedule

The schedule of Project implementation would be determined based on available funds.

I. Required Permits and Approvals

The proposed Project would require, but may not be limited to, the following approvals from the City of Saratoga. This Initial Study/Mitigated Negative Declaration (IS/MND) is intended to serve as the environmental document for these actions, and any other approvals that may be required:

- Certification of the environmental documentation
- Approval of design plans and bid specifications
- Approval of contract for construction

Additionally, development of the proposed project would require approvals from the following resource agencies:

- San Francisco Regional Water Quality Board (Region 2)
- U.S. Department of Fish and Wildlife
- California Department of Fish and Wildlife

INITIAL STUDY CHECKLIST

1. **Project Title:** Quarry Park – Sanborn County Park Connector Trail
2. **Lead Agency Name and Address:** City of Saratoga
3. **Contact Person and Phone Number:** Emma Burkhalter, Assistant Engineer, (408) 868-1274
4. **Project Location:** State Route 9, Santa Clara County (APN 503-73-003) (owned by the San Jose Water Company) with segments crossing through parcels 517-04-011, 517-04-060, 517-04-061, 517-32-001, and 503-48-045.
5. **Project Sponsor's Name and Address:**
City of Saratoga, Public Works Department
13777 Fruitvale Avenue
Saratoga, CA 95070
6. **General Plan Land Use Designation:**
Hillside – Open Space (OS-H)
7. **Zoning:** Residential Open Space (R-OS)
8. **Description of Project:**
Please see pages 1-20 of this Initial Study
9. **Surrounding Land Uses and Setting:**
Please see page 1 of this Initial Study
10. **Other Public Agencies Whose Approval is Required:**
San Francisco Regional Water Quality Board (Region 2)
U.S. Department of Fish and Wildlife
California Department of Fish and Wildlife

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a Potentially Significant Impact, as indicated by the checklist on the following pages.

- | | | |
|--|---|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture & Forestry Resources | <input checked="" type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input checked="" type="checkbox"/> Geology & Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> | <input type="checkbox"/> Hazards & Hazardous Materials |
| <input type="checkbox"/> | <input type="checkbox"/> Hydrology & Water Quality | |
| <input type="checkbox"/> Land Use | <input type="checkbox"/> Mineral Resources | <input checked="" type="checkbox"/> Noise |
| <input type="checkbox"/> Population & Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Utilities & Service Systems | <input type="checkbox"/> Mandatory Findings of Significance |

Determination:

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

City of Saratoga
Quarry Park-Sanborn County Park Connector Initial Study
Initial Study Checklist

Signature

Date

Printed Name

For

ENVIRONMENTAL CHECKLIST

I. AESTHETICS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a State scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) *Would the project have a substantial adverse effect on a scenic vista?*

While the City of Saratoga does not have officially designated scenic vistas, the Open Space and Conservation Element of Saratoga's existing General Plan does note that undeveloped and agricultural lands are valuable scenic open spaces and that the preservation of these spaces with their scenic views and undisturbed wildlife habitat is essential for the preservation of the City's rural character. Additionally, Sanborn Road, Bohlman Road/Montevina Road, and Congress Springs Road (from Saratoga City boundary to Santa Cruz County boundary) which are all proximate to the Project site are designated as County Scenic Roadways. Sanborn Road, which is located to the west of the Project site, is surrounded by dense tall trees on both sides which limit long range views of the site from this roadway. For this reason, and because the Project would construct a hiking trail, the proposed Project would not adversely affect views from this County designated Scenic Roadway. Bohlman Road/Montevina Road is slightly closer to the Project site than Sanborn Road; however, the topography of the area in addition to the significant amount of vegetation surrounding this roadway would severely limit views of the Project site from this road. While some views of the site may be possible from certain points on this road, as described above, the proposed Project would not entail structures with the potential to substantially alter these views. Congress Springs Road borders the Project site to the north. Although the proposed trail may be intermittently visible from this road, the topography of the area in addition to the significant amount of vegetation surrounding this roadway would severely limit views of the Project site from this road. Moreover, the Project would include habitat enhancement strategies which would serve to protect natural scenic resources, and historic preservation measures included as a part of the Master Plan would preserve the historic elements of the site which contribute to its scenic value. As result, the proposed Project would have a *less-than-significant* impact on scenic vistas.

b) *Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and historic buildings within a State scenic highway?*

As shown on Figures 3 and 4, California State Route (SR) 9 runs along the northern border of the Project site. SR 9 is designated by the California Scenic Highway Mapping System as an official State scenic highway from the Santa Cruz County line to the Los Gatos city limit. This means that the portion of SR 9 adjacent to the Project site is designated as an official State scenic highway.⁴

The proposed Project would entail the development of a public trail connecting two parks. As described in the Project Description above, the proposed Project does not include the construction of structures with the potential to make a substantial adverse impact on the scenic resources that exist on the site. During the construction of the trail, the presence of machinery and active construction may have temporary impacts on the views of the site from SR 9. However, vegetation between SR 9 and the trail would serve to reduce potential visual impacts. The topography of the site would also serve to minimize long term impacts. Therefore, while there may be temporary impacts to the visual resources as seen from SR 9 during the construction period, long-term implementation of the Project, would not substantially damage scenic resources within a State scenic highway and a *less-than-significant* impact would result.

c) *Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*

The existing visual character of the Project site is primarily characterized by undisturbed natural areas. The proposed project would result in generally non-intrusive development, including a multi-use trail, bridges at creek crossings, associated signage, and revegetation in areas of disturbed soil. The visual effects of the proposed project would be minor, and would consist of changes to the site that make the area accessible for the use of hikers and equestrians. Therefore, the Project would not substantially degrade the existing visual character of the site and related impacts would be *less than significant*.

d) *Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?*

Because the site would not be open during nighttime hours, no new lighting is proposed as a part of the Project. Therefore, the Project would result in *no impacts* related to increased light or glare.

⁴ California Department of Transportation, California Scenic Highway Mapping System, http://www.dot.ca.gov/hq/LandArch/scenic_highways/, accessed May 3, 2019.

II. AGRICULTURE AND FORESTRY RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with an existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or of conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) *Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

As shown on the maps prepared by the California Resources Agency, no part of the Project site or the sites surrounding the Project site are designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.⁵ Therefore, the proposed Project would have *no impact* with respect to the conversion of farmland.

⁵ The Natural Resources Agency, Department of Conservation, 2010, Santa Clara County Important Farmland 2010.

b) *Would the project conflict with an existing zoning for agricultural use, or a Williamson Act contract?*

As shown on maps prepared by the California Natural Resources Agency neither the Project site nor the land directly surrounding the Project site are under Williamson Act contracts.⁶ Additionally, as discussed above in the description of the Project, the Project site is not zoned for agriculture. Therefore, the proposed Project would not conflict with an existing zoning for agricultural use, or a Williamson Act contract and *no impact* would result.

c) *Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?*

As shown on maps prepared by the California Department of Forestry and Fire Protection, implementation of the proposed Project would not conflict with existing zoning for or cause the rezoning of forest land, timberland, or timberland zoned Timberland Production.⁷ Therefore, the Project would result in *no impacts*.

d) *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

The proposed Project would include natural resources management guidelines as described in the Master Plan for Quarry Park, as well as habitat enhancements, and would include limited removal of trees. Therefore, while the site would be occupied by a public trail with implementation of the proposed Project, impacts related to the loss or conversion of forest land to non-forest use would be *less than significant*.

e) *Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or of conversion of forest land to non-forest use?*

Small-scale agricultural operations including vineyards are located in the vicinity of the Project site. However, the implementation of the trail would not adversely impact agricultural operations. In addition, users of the trail would be moving through the area (rather than staying for long periods of time). As a result, the Project would not have the potential to result in nuisance complaints which could put pressure on these agricultural uses to be converted to non-agricultural uses. The distance of the trail from other surrounding agricultural operations, the hilly topography of the area, as well as the large amount of intervening vegetation would serve to minimize potential adverse impacts related to the proximity of agricultural and non-agricultural uses. Moreover, given that the proposed Project is intended to preserve open space and natural resources, no aspect of the proposed Project would be considered to result in changes to the environment that would result in the conversion of forest land to non-forest use. In fact, the

⁶ The Natural Resources Agency, Department of Conservation, 2013/2014, Santa Clara County Williamson Act FY 2013/2014.

⁷ The State of California, California Department of Forestry and Fire protection, Fire Resource Assessment Program, The Management Landscape.

addition of trails that access the Project site and surrounding areas would serve to reduce the pressure to convert surrounding land to non-forest uses. For these reasons, the proposed Project would result in *less-than-significant* impacts related to the potential conversion of forest and agricultural lands.

III. AIR QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?				

This section analyzes the types and quantities of air pollutant emissions that would be generated by the potential construction and operation of the proposed Project.

Air Pollutants of Concern

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and State law under the National and California Clean Air Act, respectively. Air pollutants are categorized as primary and/or secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NO_x), sulfur dioxide (SO₂), coarse inhalable particulate matter (PM₁₀), fine inhalable particulate matter (PM_{2.5}), and lead (Pb) are primary air pollutants. Of these, all of them except for ROGs are “criteria air pollutants,” which means that ambient air quality standards (AAQS) have been established for them. The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect those “sensitive receptors” most susceptible to further respiratory distress, such as

asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Toxic Air Contaminants

In addition to criteria air pollutants, both the State and federal government regulate the release of Toxic Air Contaminants (TACs). The California Health and Safety Code define a TAC as “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health.” A substance that is listed as a hazardous air pollutant pursuant to Section 112(b) of the federal Clean Air Act (42 United States Code Section 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency (Cal/EPA), acting through the California Air Resources Board (CARB), is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health.

a) *Would the project conflict with or obstruct implementation of the applicable air quality plan?*

In April, 2017, the Bay Area Air Quality Management District (BAAQMD) adopted the 2017 Bay Area Clean Air Plan (CAP). The CAP takes into account local land use designations so that if a Project is consistent with the existing land use designation, it is also consistent with the applicable CAP. The proposed Project would result in the development of a trail connecting two existing parks. The proposed Project would be consistent with existing land use designations and would not require any other change in General Plan designation or a zoning amendment. Due to its scale and type, the proposed Project does not have the potential to substantially affect housing, employment, and population projections within the Santa Clara County region. Therefore, because the Project is consistent with the land use designation for the area, the Project would not conflict or obstruct implementation of the 2017 Bay Area CAP and would result in a *less-than-significant* impact.

b) *Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?*

A review of the BAAQMD screening criteria indicates that the 3.22 mile trail, which would comprise approximately six acres, is well below the 600-acre screening level for parks. BAAQMD CEQA Air Quality Guidelines, May 2017, at Table 3-1. Because the Project falls under BAAQMD’s screening criteria for public parks, a detailed air quality assessment of the Project’s air pollutant emissions is not required. The following describes in general terms the Project-related impacts from potential future short-term construction activities and long-term operation of the Project

Construction Period

Criteria air pollutants generated during construction activities would include the following sources:

- a.) Exhaust emissions from powered construction equipment;
- b.) Fugitive dust generated by earthmoving, excavation, and other construction activities; and
- c.) Motor vehicle emissions associated with vehicle trips.

Air pollutant emissions from construction activities on-site would vary daily as construction activity levels change and during different construction phases of the proposed Project. However, the amount of dust generated during construction is expected to be minimal but variable, and is dependent on the size of the area disturbed at one time along with the amount of activity, the equipment being operated, soil conditions, and meteorological conditions. Consequently, construction-related criteria pollutant emissions would result in a *less-than-significant impact*. However, the measures included in the Quarry Park Master Plan Mitigation Measure AIR-1 (copied below for reference), which also apply to this Project, would reduce any impact even further.

Operation Period

The operation of the trail would include a minimal number of additional vehicle trips by trail users and maintenance crews. Because the Project falls under BAAQMD's screening criteria, operation-related criteria pollutant emissions would be considered *less than significant*.

Quarry Park Master Plan Mitigation Measure AIR-1: The Project will implement BAAQMD's Basic Control Measures for fugitive dust control during future construction to reduce fugitive dust emissions (PM₁₀ and PM_{2.5}). The Project contractor shall prepare a dust control plan prior to commencement of construction activities. Specification of the approved dust control measures shall be included in all construction documents and implemented during construction activities. The dust control plan shall include the following BAAQMD Basic Control Measures listed below:

- Water all active construction areas at least twice daily, or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour (mph). Reclaimed water should be used whenever possible.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Apply water twice daily or as often as necessary, to control dust, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily (with water sweepers using reclaimed water if possible), or as often as needed, with water sweepers all paved access roads, parking areas and staging areas at the construction site to control dust.
- Sweep public streets daily (with water sweepers using reclaimed water if possible) in the vicinity of the Project site, or as often as needed, to keep streets free of visible soil material.
- Hydroseed or apply non-toxic soil stabilizers to inactive construction areas.

- Enclose, cover, water twice daily or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit vehicle traffic speeds on unpaved roads to 15 mph.
- Vehicle idling times shall be minimized either by shutting equipment off when not in use, or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]).
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
- Replant vegetation in disturbed areas as quickly as possible.
- Install sandbags or other erosion control measures to prevent silt runoff from public roadways.

c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

According to the CARB's Area Designations, the San Francisco Bay Area Air Basin (SFBAAB) is currently designated as a non-attainment area for California and National O₃, California and National PM_{2.5}, and California PM₁₀ AAQS.⁸ Any project that does not exceed established standards, or can implement measures to mitigate emissions to levels below the BAAQMD's significance thresholds, does not add significantly to a cumulative impact. As described above, the Project consists of developing a trail, the construction or operation of which would not result in a substantial net increase in pollutants, and impacts to air quality would be considered *less than significant*.

d) *Would the project expose sensitive receptors to substantial pollutant concentrations?*

The Project would expose sensitive receptors to elevated pollutant concentrations if it causes or contributes significantly to elevated pollutant concentration levels. Localized concentrations refer to the amount of pollutant in a volume of air (ppm or µg/m³) and can be correlated to potential health effects to sensitive populations.

⁸ California Air Resources Board (CARB), 2011. *Area Designations: Activities and Maps*, <http://www.arb.ca.gov/design/adm/adm.htm>.

Construction Risk and Hazards

The Project would minimally elevate concentrations of TACs and diesel-PM_{2.5} in the vicinity of sensitive land uses during construction activities. Sensitive land uses in the vicinity of the Project include single-family residential land uses near the Project site on Congress Springs Road/ Highway 9 and Archibald Drive and a single family residence at the Domaine Eden winery at the western boundary of the trail. However, because the Project is designed to include Quarry Park Master Plan Mitigation Measure AIR-1, construction impacts would be reduced to a *less-than-significant* level.

Operation Risk and Hazards

The proposed Project would result in construction of a public trail, which is not the type of sensitive land use that would necessitate an evaluation of impacts relative to BAAQMD's community risk thresholds for operation. As a result, a *less-than-significant* impact would occur.

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO called hotspots that have the potential to exceed the State 1-hour standard of 20 ppm or the eight-hour standard of 9 ppm. According to the BAAQMD CEQA Guidelines, under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.⁹ Development of the proposed Project would generate a nominal amount of vehicle trips associated with a public trail. Therefore, impacts are *less than significant* and no mitigation measures are necessary.

e) Would the project create objectionable odors affecting a substantial number of people?

Public trails and parks are not considered a type of land use with the potential to create objectionable odors. The type of facilities that are considered to have objectionable odors include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. Development of the proposed Project would not generate objectionable odors that would lead to a public nuisance; therefore, operational impacts would result in *no impact*.

During any construction activities, construction equipment exhaust would temporarily generate odors. Any construction-related odor emissions would be temporary, intermittent in nature, and would dissipate rapidly from the source with an increase in distance. Odors would not likely be objectionable and constitute a public nuisance. Impacts associated with construction-generated odors would be *less than significant* and no mitigation measures are necessary.

⁹ Bay Area Air Quality Management District (BAAQMD), 2011. *California Environmental Quality Act Air Quality Guidelines*.

IV. BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on a plant or animal population, or essential habitat, defined as a candidate, sensitive or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

A Biological Resources Report of the Project area was completed by H. T. Harvey and Associates. See Attachment A to this Initial Study. The Biological Resources Report was based on site observations; review of information from the California Natural Diversity Database (CNDDB), California Native Plant Society (CNPS), U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW); review of aerial images of the Project area; and review of other relevant scientific literature and technical databases. In addition, the

Initial Study for the Quarry Park Master Plan evaluated potential impacts to biological resources in the vicinity of the project area and identified Conservation Measures intended to prevent adverse effects on biological resources. The following discussion is based on the Biological Resources Report, which is included as Attachment A, and on the Quarry Park Master Plan Initial Study.

The Project area supports potentially regulated and sensitive habitats, as well as habitats that could support a variety of special-status plant and wildlife species. The potential impacts from the Project are identified below, along with mitigation measures to reduce potentially significant impacts to less-than-significant levels.

a) *Would the project have a substantial adverse effect, either directly or through habitat modifications, on a plant or animal population, or essential habitat, defined as a candidate, sensitive or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

According to the Biological Resources Report, the following biological resources may occur within or immediately adjacent to the proposed Project and result in constraints on Project activities: bent-flowered fiddleneck, Loma Prieta hoita, woodland woollythreads, and white-flowered rein orchid (all CNPS CRPR 1 or 2); California red-legged frog (federally listed as threatened and a California species of special concern); Santa Cruz black salamander and California giant salamander (both California species of special concern); western pond turtle (California species of special concern); olive-sided flycatcher (a California species of special concern when nesting); San Francisco dusky-footed woodrats (California species of special concern); pallid bats (California species of special concern); and nesting birds protected under the Migratory Bird Treaty Act and California Fish and Game Code.

Special-Status Plants

No federal or State-listed plant species are expected to occur in the study area. However, four plants categorized by the California Native Plant Society ("CNPS") as California Rare Plant Rank (CRPR) 1 or 2 (bent-flowered fiddleneck, Loma Prieta hoita, woodland woollythreads, and white-flowered rein orchid) are potentially present in areas where they could be impacted by the Project. The Quarry Park Master Plan contains goals, policies, and Conservation Measures (CM), including CM-3 (Minimize Impacts on Special-status Plants and Sensitive Natural Communities including Wetlands), intended to avoid adverse impacts on special-status plants. Although implementation of these policies and Conservation Measures would reduce the magnitude and extent of Project impacts on special-status plant species, the Project could result in the loss of individuals, as complete avoidance may not be feasible while still meeting Project goals and objectives.

Permanent impacts on special-status plants that could reduce the number or restrict the range of rare or endangered species would be considered significant. Impacts on populations of species with a CNPS rank of 1 and 2, such as the four special-status plants considered to have some potential for occurrence on the site, would be considered significant and require compensatory mitigation if more than 10 percent of the overall number of a given species occurring within the

Project area, and/or known populations of the species within a 5-mile radius of the Project area (if such populations are known), would be affected. In addition, the impact may be considered significant if less than 10 percent of the population within the impact area and/or known populations of the species within a 5-mile radius of the Project area would be affected but the population exhibits unusual morphology, occurs on unusual substrates for that species, or if loss related to the Project could reduce the species' range, as determined by a qualified botanist familiar with the population present in the impact area and the rare flora of the region. With implementation of Mitigation Measure BIO-1, and Mitigation Measures BIO-3 and BIO-4 if needed, this impact would be reduced to a *less-than-significant* level.

Mitigation Measure BIO-1: Pre-Activity Surveys for Special-Status Plants

Prior to initial ground disturbance and during the appropriate blooming period (i.e., bent-flowered fiddleneck, June – July; Loma Prieta hoita, June – July; woodland woollythreads, March – July; and white-flowered rein orchid, May - September), a focused survey for these four potentially occurring special-status plant species will be conducted within suitable habitat in the project footprint and a minimum 20-ft buffer around the project footprint. This buffer may be increased by the qualified plant ecologist depending on site-specific conditions and activities planned in the areas, but must be at least 20-ft wide. Situations for which a greater buffer may be required include proximity to proposed activities expected to generate large volumes of dust, such as grading; or potential for project activities to alter hydrology supporting the habitat for the species in question. Surveys are to be conducted in a year with near-average or above-average precipitation. The purpose of the survey will be to assess the presence or absence of the potentially occurring species. If none of the target species are found in the impact area or the identified buffer, then no further mitigation will be warranted. If bent-flowered fiddleneck, Loma Prieta hoita, woodland woollythreads, or white-flowered rein orchid individuals are found in the survey area, then Mitigation Measures BIO-2 and BIO-3 will be implemented.

Mitigation Measure BIO-2: Avoidance Buffers.

To the extent feasible, and in consultation with a qualified plant ecologist, the project proponent will design and construct the project to avoid completely impacts on all populations of special-status plant species within the project site or within the identified buffer of the impact area. Avoided special-status plant populations will be protected by establishing and observing the identified buffer between plant populations and the impact area. All such populations located in the impact area or the identified buffer, and their associated designated avoidance areas, will be clearly depicted on any construction plans. In addition, prior to initial ground disturbance or vegetation removal, the limits of the identified buffer around special-status plants to be avoided will be flagged or fenced. The flagging will be maintained intact and in good condition throughout project-related construction activities.

If complete avoidance is not feasible and more than 10% of a population (by occupied area or individuals) would be impacted as determined by a qualified plant ecologist, Mitigation Measure BIO-3 will be implemented.

Mitigation Measure BIO-3: Preserve Off-Site Populations of Special-Status Plant Species.

If avoidance of CRPR 1 or 2 special-status plant species is not feasible and more than 10% of the population would be impacted, compensatory mitigation will be provided via the preservation, enhancement, and management of occupied habitat for the species. To compensate for impacts on CRPR 1 or 2 special-status plants, off-site habitat occupied by the affected species will be preserved and managed in perpetuity at a minimum 1:1 mitigation ratio (at least one plant preserved for each plant affected, and at least one occupied acre preserved for each occupied acre affected), for any impact over the 10% significance threshold.

Areas proposed to be preserved as compensatory mitigation for special-status plant impacts must contain verified extant populations of the CRPR-ranked plants that would be impacted. Mitigation areas will be managed in perpetuity to encourage persistence and even expansion of the preserved target species. Mitigation lands cannot be located on land that is currently held publicly for resource protection unless substantial enhancement of habitat quality will be achieved by the mitigation activities. The mitigation habitat will be of equal or greater habitat quality compared to the impacted areas, as determined by a qualified plant ecologist, in terms of soil features, extent of disturbance, vegetation structure, and dominant species composition, and will contain or successfully re-establish at least as many individuals of the species as are impacted by project activities. The permanent protection and management of mitigation lands will be ensured through an appropriate mechanism, such as a conservation easement or fee title purchase. A habitat mitigation and monitoring plan (HMMP) will be developed and implemented for the mitigation lands. That plan will include, at a minimum, the following information:

- a summary of habitat impacts and the proposed mitigation;
- a description of the location and boundaries of the mitigation site and description of existing site conditions;
- a description of measures to be undertaken to enhance (e.g., through focused management that may include removal of invasive species in adjacent suitable but currently unoccupied habitat) the mitigation site for the focal special-status species;
- a description of measures to transplant individual plants or seeds from the impact area to the mitigation site, if appropriate (which will be determined by a qualified plant or restoration ecologist);
- proposed management activities to maintain high-quality habitat conditions for the focal species;

- a description of habitat and species monitoring measures on the mitigation site, including specific, objective final and performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc. At a minimum, performance criteria will include demonstration that any plant population fluctuations over the monitoring period do not indicate a downward trajectory in terms of reduction in numbers and/or occupied area for the preserved mitigation population that can be attributed to management (i.e., that are not the result of local weather patterns, as determined by monitoring of a nearby reference population, or other factors unrelated to management); and
- contingency measures for mitigation elements that do not meet performance criteria.

The HMMP will be prepared by a qualified plant or restoration ecologist. Approval of the HMMP by the City will be required before the project impact occurs.

Significance after Mitigation: The implementation of these mitigation measures would reduce the impact to a *less-than-significant* level.

California Red-legged Frog

There are three records of the California red-legged frog (federally listed as threatened and a California species of special concern) within 3 mi of the study area, including one record from Saratoga Creek, at a location approximately 0.3 mi of the study area (CNDDB 2019). While no high-quality breeding habitat for the California red-legged frog is present in the study area, this species may use streams and associated riparian corridors in the study area as foraging and/or dispersal habitat.

Project activities would not result in the loss of breeding habitat for the California red-legged frog. However, suitable foraging and dispersal habitat would be disturbed. This impact would be temporary, occurring only during trail construction and maintenance activities. In addition, if individuals are present during construction activities, grading, excavation, and ground disturbance associated with construction of the trail, retaining walls, and bridge abutments, could result in injury or mortality of individuals, a significant impact due to the species regional rarity. Seasonal movements may be temporarily affected during construction activities because of disturbance, and substrate vibrations may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation.

In addition, potential spills or leaks of hazardous chemicals from construction equipment could harm individual frogs and increases in human concentration and activity in the vicinity of suitable habitat may result in an increase in native and non-native predators that would be attracted to trash left at the work site and that would prey opportunistically on individuals of this species. Implementation of Mitigation Measures BIO 4–6, as well as Mitigation Measure BIO-

11, BMPs for Work within Sensitive Habitats, as described below, would reduce project impacts on the California red-legged frog to a less-than-significant level.

Mitigation Measure BIO-4: Worker Environmental Awareness Program.

Before any construction activities begin, the City will hire a qualified biologist who will conduct a training session for all construction personnel. At a minimum, the training will include descriptions of all special-status species potentially occurring on the project site and their habitats, the importance of these species, the general measures that are being implemented to conserve them as they relate to the proposed project, and the boundaries within which project activities may be accomplished.

Mitigation Measure BIO-5: Avoidance.

Because dusk and dawn are often the times when the red-legged frog is most actively moving and foraging, to the maximum extent practicable, earthmoving and other project activities will cease no less than 30 minutes before sunset and will not begin again prior to 30 minutes after sunrise. Further, to the extent practicable, ground-disturbing activities will be avoided from October through April because that is when red-legged frogs are most likely to be moving through upland areas. When ground-disturbing activities must take place between November 1 and March 31, the following measures will be implemented.

Mitigation Measure BIO-6: Pre-activity Survey.

A qualified biologist will conduct a preconstruction survey for the California red-legged frog prior to initial ground disturbing activities within 100 ft of any stream crossing and will remain on-site to monitor during all initial ground-disturbing activities within this area. If a California red-legged frog is encountered in the work area, all activities with the potential to result in the harassment, injury, or death of the individual will be immediately halted and will not resume until the individual leaves the project site of its own accord.

Santa Cruz Black Salamander and California Giant Salamander

The project would not result in the loss of any aquatic breeding habitat for the California giant salamander. Construction activities, particularly tree removal, would result in the permanent loss of a small amount of riparian habitat (i.e., potential breeding habitat for the Santa Cruz black salamander). However, because of the relatively small amount of riparian habitat that would be affected relative to the extent of suitable riparian habitat in the region, impacts on breeding habitat for the Santa Cruz black salamander would be considered less than significant.

If Santa Cruz black salamanders or California giant salamanders are present during project activities, individuals would be at risk for injury or mortality due to equipment, vehicle traffic, and foot traffic, a potentially significant impact (Significance Criterion A) due to the species regional rarity. In addition, substrate vibrations may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation; may interfere with predator detection; and may result in a decrease in time spent foraging. Such impacts would be temporary in nature, occurring only during construction or maintenance activities. Implementation of Mitigation Measure 4, as described above for the California red-legged frog; Mitigation Measure 11, as

described under Impact 6.2.2 below; and Mitigation Measure 7 would reduce project impacts on these species to a less-than-significant level.

Mitigation Measure BIO-7: Pre-activity Survey.

A qualified biologist will conduct a preconstruction survey for special-status amphibians and reptiles prior to initial ground disturbing activities within 100 ft of any stream crossing and will remain on-site to monitor during all initial ground-disturbing activities within this area. If a species of special concern is encountered in the work area, all activities with the potential to result in the harassment, injury, or death of the individual will be immediately halted and the following measures implemented:

- If eggs or larvae are found, the qualified biologist will establish a buffer around the location of the eggs/larvae and work may proceed outside of the buffer zone. No work will occur within the buffer zone. Work within the buffer zone will be rescheduled until the time that eggs have hatched and/or larvae have metamorphosed.

If an adult is found, the individual will be captured and relocated to a safe location outside of the work area by a qualified biologist, after which work may proceed.

Western Pond Turtle

The study area provides marginal quality basking habitat for western pond turtles due to the paucity of open water and basking sites. Therefore, there is a low probability of this species using the study area for nesting. However, pond turtles may use the study area, especially the riparian corridors, for dispersal.

The project would not result in the loss of any aquatic habitat for the western pond turtle or in a substantial loss of upland dispersal habitat. However, if individuals are present during project activities, they would be at risk for injury or mortality due to equipment, vehicle traffic, and foot traffic, a potentially significant impact (Significance Criterion A) due to the species regional rarity. Such impacts would be temporary in nature, occurring only during construction or maintenance activities. Including the western pond turtle when implementing Mitigation Measure BIO-4, as described above for the California red-legged frog, and Mitigation Measure BIO-7, as described for the California giant salamander and Santa Cruz black salamander, would reduce project impacts on the western pond turtle to a less-than-significant level.

Olive-sided Flycatcher

The mixed evergreen forest and mixed riparian forest in the study area provides suitable nesting and foraging habitat for this species. Project construction activities may affect olive-sided flycatcher nesting and foraging habitat and could possibly impact active nests, including eggs or nestlings. Construction activities, particularly tree removal, could result in the permanent loss of nesting habitat. However, because of the relatively small amount of forest habitat that would be affected relative to the extent of suitable habitat in the region, impacts on habitat for the olive-sided flycatcher would not rise to the CEQA standard of having a substantial adverse effect.

Adult olive-sided flycatchers are not expected to be killed or injured due to project activities because they could easily fly from the work site prior to such effects occurring. However, eggs or young in nests may be killed or injured as a result of destruction by construction personnel or equipment, or removal of vegetation containing nests. Further, nesting may be disrupted to the extent that nests would fail because of disturbance that was too frequent or too severe. In addition, project activities causing a substantial increase in noise, movement of equipment, or human presence may have a direct effect on the behavior of individuals causing them to avoid work sites and possibly exposing them to increased competition with other birds in the areas to which they disperse and increased levels of predation caused by unfamiliarity with the new area. These types of impacts are expected to occur primarily while construction or maintenance activities are ongoing. Increases in human concentration, including ongoing trail use, and activity associated with maintenance activities near suitable habitat also may result in an increase in native and non-native predators that would be attracted to trash left in the work site.

However, based on our site observations, the areal extent of the study area, and known breeding densities of this species, no more than two pairs of olive-sided flycatchers are expected to nest on or adjacent to the study area, if it is present at all. Therefore, the loss of individuals potentially resulting from project development would represent a very small fraction of the regional population of this species and would not rise to the CEQA standard of having a *substantial* adverse effect. Nevertheless, all native bird species, including the olive-sided flycatcher are protected from direct take by federal and state statutes (see also discussion of impacts to native bird species in below).

San Francisco Dusky-Footed Woodrat

Many nests of the San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), a California species of special concern, were observed at the site adjacent to existing trails during the field survey. Additional nests are likely scattered throughout these habitats in the study area. Project activities may result in the injury or mortality of dusky-footed woodrats because of equipment use and worker foot traffic, particularly when woodrats are taking refuge in their stick nests. Suitable habitat and nests may be directly lost as a result of clearing and grading for the proposed trail, retaining walls, and bridge abutments. Project construction could potentially result in the loss of tens of nests due to the species' abundance along the proposed trail's alignment.

Indirect impacts also could occur as a result of over-crowding (as individuals lost habitat and moved to areas that were already occupied) and increased risk of predation. As a result of the species' regional abundance and high reproductive capabilities, project impacts on dusky-footed woodrats would not have a substantial effect on regional populations. However, woodrats are very important ecologically in that they provide an important prey source for raptors (particularly owls) and for predatory mammals, and their nests also provide habitat for a wide variety of small mammals, reptiles, and amphibians. As a result, the loss of large numbers of woodrats and their nests would be a significant impact. Implementation of Mitigation Measures BIO-4, as described

above, as well as Mitigation Measures BIO-8 would reduce project impacts on the San Francisco dusky-footed woodrat and its habitat to a less-than-significant level.

Mitigation Measure BIO-8. Preconstruction Surveys and Avoidance or Nest Relocation.

Prior to any clearing of, or work within, woodland, riparian, and scrub habitats, a qualified biologist will conduct a survey for San Francisco dusky-footed woodrat nests. If active nests are determined to be present within or very close to the impact areas, the following measures will be implemented.

- Dusky-footed woodrats are year-round residents. Therefore, avoidance measures are limited to restricting project activities to avoid direct impacts on woodrats and their active nests to the extent feasible. Ideally, a minimum 5-ft buffer will be maintained between project activities and each nest to avoid disturbance. In some situations, a smaller buffer may be allowed if, in the opinion of a qualified biologist, removing the nest would be a greater impact than that anticipated as a result of project activities.
- If avoidance of active nests is not feasible, then the woodrats will be evicted from their nests prior to the removal of the nests and onset of any clearing or ground-disturbing activities to avoid injury or mortality of the woodrats. The nests will be dismantled and the nesting material moved to a new location outside the project's impact areas so that it can be used by woodrats to construct new nests. Prior to nest deconstruction, each active nest will be disturbed by a qualified wildlife biologist to the degree that all woodrats leave the nest and seek refuge out of the impact area. Whether the nest is on the ground or in a tree, the nest will be nudged to cause the woodrats to flee. The nest will then be dismantled and the nest material piled at the base of a nearby hardwood tree or shrub (preferably with refuge sites among the tree roots or with dense vegetation or other refugia nearby) outside of the impact area. The spacing between relocated nests will not be less than 100 ft, unless a qualified biologist has determined that the habitat can support higher densities of nests.

Implementation of Mitigation Measure BIO-8 would be adequate to assure that impacts on dusky-footed woodrats and their habitat would be less than significant. Because the species' habitats are relatively widespread, impacts on its habitat would not require additional species-specific mitigation.

Pallid Bats

The pallid bat, a California species of special concern, may forage throughout the study area. In addition, several larger trees with small to moderate-sized cavities were observed along the project alignment during the reconnaissance survey. These trees provide suitable roosting and breeding habitat for the pallid bat and removal of such trees could result in the loss of pallid bat roost sites. When trees containing roosting colonies or individual pallid bats are removed or

modified, individual bats could be physically injured or killed; could be subjected to physiological stress from being disturbed during torpor; or could face increased predation because of exposure during daylight. In addition, nursing young may be subjected to disturbance-related abandonment by their mothers. Proposed project-related disturbance near a maternity roost of pallid bats, could cause females to abandon their young. Such impacts could be significant (Significance Criterion A) because the species' population and available roosting habitat are limited locally and regionally and because loss of habitat or individuals may have a substantial adverse effect on local and regional populations of the species. Implementation of Mitigation Measures BIO-9 and BIO-10 would reduce project impacts on the pallid bat to a less-than-significant level.

Mitigation Measure BIO-9. Protect Bat Colonies.

To minimize impacts on pallid bats the following measures will be implemented:

- A pre-activity survey for roosting pallid bats will be conducted prior to the onset of ground-disturbing activities. A qualified bat biologist will conduct a survey to look for evidence of bat use within suitable habitat. If evidence of use is observed, or if high-quality roost sites are present in areas where evidence of bat use might not be detectable (such as a tree cavity), an evening survey and/or a nocturnal acoustic survey may be necessary to determine if a bat colony is present and to identify the specific location of the bat colony.
- If no active maternity colony or non-breeding bat roost is located, project work can continue as planned.
- If an active pallid bat maternity colony or non-breeding roost is located, the project work will be redesigned to avoid disturbance of the roosts, if feasible.
- If an active maternity colony is located and project work cannot be redesigned to avoid removal or disturbance of the occupied tree, disturbance will be scheduled to take place outside the maternity roost season (March 15–July 31), and a disturbance-free buffer zone (determined by a qualified bat biologist) will be implemented during the maternity roost season.
- If an active non-breeding bat roost is located and project work cannot be redesigned to avoid removal or disturbance of the occupied tree, the individuals will be safely evicted between August 1 and October 15 or between February 15 and March 15 (as determined by a Memorandum of Understanding with CDFW). Bats may be evicted through exclusion after notifying CDFW. Trees with roosts that must be removed will first be disturbed at dusk, just before removal that same evening, to allow bats to escape during the darker hours. Mitigation Measure BIO-10 (Provide Alternative Bat Roost Habitat) may need to be implemented subsequently.

Mitigation Measure BIO-10. Provide Alternative Bat Roost Habitat. If, after implementation of Mitigation Measure BIO-9, a qualified bat biologist identifies a tree containing a pallid bat maternity roost that is to be removed by project activities, a qualified bat biologist will design and determine an appropriate location for an alternative roost structure. If a tree containing a pallid bat maternity roost is not removed, but project-related disturbance causes the abandonment of the roost site (even during the non-breeding season), then the City will either monitor the roost site to determine whether the affected species returns to the roost, or construct an alternative roost. If the City elects to monitor the roost and bats do not return within one year, then an alternative roost will be constructed.

Significance after Mitigation: The implementation of these mitigation measures would reduce the impact to a *less-than-significant* level.

b) *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Impacts on Mixed Evergreen Forest

The project would impact up to 6.18 ac of mixed evergreen forest. However, the vast majority of the study area and adjacent habitat is composed of this alliance type. Additionally, this alliance is common on a regional level, and is known to occur extensively in the Santa Cruz Mountains (Sawyer et al 2009). Furthermore, impacts from trail construction would be minor within this alliance type. Understory vegetation is sparse and undeveloped, and most trail construction would only result in soil disturbance and would not impact a substantial amount of vegetation. Overstory vegetation would be left mostly intact, with four California bay trees currently slated for removal. Additional California bay trees may be removed during the course of project implementation, however, the number of trees would be minimal, and would be insignificant considering the prevalence of California bay within the study area specifically and in the region generally. California bay is a particularly robust species, and any removed trees would likely regenerate naturally from stump or root stock. Based upon this alliance's local and regional abundance and the minor nature of impacts project implementation would cause, impacts on mixed evergreen forest are considered less than significant.

Impacts on Mixed Riparian Forest

The Project could result in impacts on riparian habitat. Construction of the trail and associated bridges would result in minor impacts (0.03 acres) on mixed riparian forest within the study area. The project has avoided and minimized riparian impacts by designing clear span bridges for the four trail crossings that will introduce only minor abutment-related impacts on the riparian banks. However, riparian vegetation removal would occur, and would include the removal of at least one 18-inch diameter California bay tree. Vegetation recovery would be limited underneath the bridge crossings due to bridge shading. In addition, indirect impacts could occur in the form of equipment spills and bank destabilization, if not avoided. Loss of riparian vegetation would

constitute a significant impact under CEQA owing to the importance of this habitat type to regional biodiversity. Implementation of the mitigation measures listed below would reduce impacts on riparian habitat to a less-than-significant level.

Mitigation Measure BIO-11. Best Management Practices for Work within Sensitive Habitats. The following measures will be implemented to reduce impacts on mixed riparian forest and the associated streams. Additionally, the project will acquire permits from CDFW and RWQCB and follow all requirements and avoidance and minimization measures listed therein.

- Personnel will prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels.
- Spill prevention kits will always be in close proximity when using hazardous materials.
- No equipment servicing will be done in the stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators).
- Personnel will use the appropriate equipment for the job that minimizes disturbance to the stream bottom. Appropriately-tired vehicles, either tracked or wheeled, will be used depending on the situation
- Temporary fills, such as for access ramps or scaffolding, will be completely removed upon finishing the work.
- Existing native vegetation will be retained by removing only as much vegetation as necessary to accommodate the trail clearing width.
- If riparian vegetation is to be removed with chainsaws, consider using saws currently available that operate with vegetable-based bar oil
- Control exposed soil by stabilizing slopes (e.g., with erosion control blankets) and protecting channels (e.g., using silt fences or straw wattles).
- Control sediment runoff using sandbag barriers or straw wattles.
- Stabilize site ingress/egress locations.
- Temporary disturbance or removal of aquatic and riparian vegetation will not exceed the minimum necessary to complete the work.
- Vehicles operated within and adjacent to streams will be checked and maintained daily to prevent leaks of materials that, if introduced to the water, could be deleterious to aquatic life.
- Potential contaminating materials must be stored in covered storage areas or secondary containment that is impervious to leaks and spills

- All disturbed soils will be revegetated with native plants suitable for the altered soil conditions upon completion of construction. Local watershed native plants will be used if available. All disturbed areas that have been compacted shall be de-compacted prior to planting or seeding. Cut-and-fill slopes will be planted with local native or non-invasive plants suitable for the altered soil conditions.

Mitigation Measure BIO-12. Mitigation Plantings for Permanent Loss of Riparian Trees.

All trees removed within mixed riparian forest habitat will be replaced at a ratio of 1:1 (mitigation stems: impacted stems). Trees to be removed likely consist of only California bay, a tree which is very abundant within riparian areas in the study area and the vicinity. Replaced trees will preferably consist of the same species which was removed during project implementation, and be planted within the same reach where impacts occur. Irrigation will not be installed, so the replacement trees must be planted low enough on the riparian banks to anticipate intercepting seasonal groundwater. Replacement trees will be monitored annually for three years and replaced to 100% survivorship through Year 3.

Significance after Mitigation: The implementation of these mitigation measures would reduce potential impact to a *less-than-significant* level.

c) *Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal, filling, hydrological interruption or other means?*

According to the Biological Resources Report, wetlands do not occur within the study area, however, the proposed project could impact sensitive stream habitats on the project site that fall under the jurisdiction of the U.S. Army Corps of Engineers (“USACE”) and California Department of Fish and Wildlife (“CDFW”) under sections 1600-1603 of the California Fish and Game Code, and qualify as “waters of the state” subject to regulation by the Regional Water Quality Control Board (“RWQCB”).

Development of areas near creeks can negatively impact water quality. In order to eliminate direct impacts on sensitive creek habitat, the project has been designed to utilize clear span bridges at all four stream crossings, with any required footings located above the ordinary high water mark. Therefore, no direct impacts would occur within jurisdictional other waters habitat. Nevertheless, indirect impacts could still occur due to equipment spills and bank destabilization, which could adversely affect water quality. Implementation of Mitigation Measure BIO-11, discussed above, would reduce these impacts to a less-than-significant level.

Significance after Mitigation: The implementation of Mitigation Measure BIO-11 would reduce the impact to a *less-than-significant* level.

d) *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Natural habitats in the study area are surrounded by large areas of open natural habitats to the west, northwest, and south along the Santa Cruz Mountains. The study area is located in mixed evergreen forest, riparian woodland, and an existing approximately 100-ft wide powerline right-of-way. Although construction of the trail would create a narrow corridor (a 5-ft wide trail) through existing natural communities, it would result in negligible loss of habitat and animals would continue to be able to move across the trail after it is completed. Moreover, because construction of the trail is expected to require removal of only a small number of trees, no substantial changes in canopy cover or forest composition would result from project implementation.

The vegetation communities along streams and rivers often function as wildlife movement corridors, and in the study area Congress Springs Creek and other tributaries to Saratoga Creek are expected to function as such. Although the proposed trail alignment crosses streams at four locations, all four crossings would be composed of clear span bridges. Therefore, following completion of construction, the project would not impede the movement of species moving along the riparian corridors.

Noise and disturbance associated with trail construction, ongoing trail maintenance activities, and trail use by humans could cause species that commonly use habitats within the study area for dispersal to temporarily avoid moving through the site. The loudest noise would be associated with construction (including helicopter delivery of bridges) and temporary maintenance activities, and once such activities are complete, wildlife use of the surrounding areas would be similar to existing conditions. It is likely that trail use by humans will inhibit movement of some more sensitive wildlife species, such as mountain lions (*Puma concolor*), through the site, as this species is particularly sensitive to human activity. However, ample opportunity exists for movement by this species in the vicinity of the project site (either in other locations or when humans are not actively using the trail), and while dispersal or habitat use by this species may be limited by the introduction of human activity to this trail site, impacts on regional mountain lion populations or movements are not expected to be substantial. Thus, the proposed project would not interfere substantially with the movement of any native resident or migratory wildlife species

or with established native resident or migratory wildlife corridors and this impact would be less than significant.

Disturbance related to construction activities, maintenance, and post-construction trail use during the bird breeding season (February 1 through August 31, for most species) could result in the incidental loss of eggs or nestlings, either directly through the destruction or disturbance of active nests or indirectly by causing the abandonment of nests located near the trail. In particular, delivery of bridges via helicopter would introduce substantial noise, and rotor wash could physically impact nests by knocking nests, eggs, or young out of trees. However, the habitats in the study area represent a very small proportion of the habitats that support these species regionally. In addition, all species of birds currently using the study area are expected to continue to nest and forage on the site after project construction is completed because no substantial loss of habitat would occur and use of the trail following its completion would be limited to low impact activities such as hiking/jogging and horseback riding. Therefore, project impacts on common nesting and foraging birds due to disturbance would not rise to the CEQA standard of having a *substantial* adverse effect, and these impacts would not constitute a significant impact on these species or their habitats under CEQA. However, all native bird species are protected from direct take by federal and state statutes (see Sections 3.1.5 and 3.2.4). Implementation of Mitigation Measure BIO-13, which incorporates measures in the federal Migratory Bird Treaty Act (“MBTA”) and California Fish and Game Code will ensure that project activities comply with those regulations:

Mitigation Measure BIO-13. Protection Measures for Nesting Birds.

Avoidance. To the extent feasible, construction activities should be scheduled to avoid the nesting season. If construction activities are scheduled to take place outside the nesting season, all impacts on nesting birds protected under the MBTA and California Fish and Game Code would be avoided. The nesting season for most birds in the project region extends from February 1 through August 31.

Preconstruction Surveys. If it is not possible to schedule construction activities between September 1 and January 31 then preconstruction surveys for nesting birds should be conducted by a qualified ornithologist to ensure that no nests will be disturbed during project construction. We recommend that these surveys be conducted no more than seven days prior to the initiation of construction activities. During this survey, the ornithologist should inspect all trees and other potential nesting habitats (e.g., trees, shrubs, ruderal grasslands, buildings) in and immediately adjacent to the impact areas for nests.

Buffers. If an active nest is found sufficiently close to work areas to be disturbed by project activities, the ornithologist should determine the extent of a construction-free buffer zone to be established around the nest (typically 300 ft for raptors and 100 ft for

other species), to ensure that no nests of species protected by the MBTA and California Fish and Game Code would be disturbed during project implementation.

Significance after Mitigation: The implementation of these measures would reduce the impact to a *less-than-significant* level.

e) *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Santa Clara Tree Preservation and Removal Ordinance

Per the County of Santa Clara Tree Preservation and Removal Ordinance (County Code, §C16.1 to §C16.17), permits from the County are required for removal of any tree which meets the definition of protected tree. No trees within the portion of the study area in unincorporated Santa Clara County meet the definition of protected trees, due to the parcels being located within the “Hillside” zoning district and being greater than 3 acres in size. Therefore, there would be no impact regarding conflicts with the County of Santa Clara Tree Preservation and Removal Ordinance.

City of Saratoga Tree Ordinance

Per City of Saratoga Municipal Code Chapter 15, permission to remove protected trees may be granted as part of approval of other development permits. However, the Tree Ordinance only applies to private development projects, and not to projects implemented by the City itself. In addition, the only protected trees potentially affected by the project are in riparian areas and implementation of Mitigation Measure BIO-12 would replace all trees lost in riparian areas at a ratio of 1:1. Therefore, there would be no impact regarding conflicts with the City of Saratoga Tree Ordinance.

f) *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or state habitat conservation plan?*

The cities of Gilroy, Morgan Hill and San Jose, the County of Santa Clara, the Santa Clara Valley Transportation Authority and the Santa Clara Valley Water District have collaborated to create the Santa Clara Valley Habitat conservation Plan. However, the Project site does not fall within the plan’s study area. Therefore, the project would not conflict with any such plans.

V. CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

A records search at the Northwest Information Center of the California Historical Resources Information System ("NWIC") was conducted for the Project site. The results of this records search were used to inform the following analysis.

a-b) Would the project cause a substantial adverse change in the significance of a historical resource or an archaeological resource as defined in Section 15064.5?

The records search revealed that the State Office of Historic Preservation Historic Property Directory ("OHP HPD") (which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places) lists no recorded buildings or structures adjacent to the proposed project area. In addition to these inventories, the NWIC base maps show no recorded buildings or structures within the proposed project area.

There is one recorded archaeological resources in the proposed project area (P-43-000374), a moderate potential of identifying Native American archaeological resources, and a moderate potential of identifying additional historic-period archaeological resources in the project area.

As discussed in the Project Description, the proposed Project is limited to construction of a trail, construction of bridges to facilitate three stream crossings, and trail furniture, such as benches and signage. Therefore, ground disturbance would be largely limited to excavations for the trail and for bridge abutments. Therefore the potential for disturbance of unidentified underground resources would be limited. However, there is the potential that unrecorded underground resources could be encountered during trail and bridge construction.

Mitigation measures CULT-1 and CULT-2 would reduce potential impacts related to a substantial change in the significance of an archeological resource to a *less-than-significant* level.

Mitigation Measure CULT-1: Prior to commencing site preparation and trail construction, the City shall hold a preconstruction meeting with the construction crew to inform them with a description of the types of resources that could be discovered and the steps to take in the event of a find.

Mitigation Measure CULT- 2: If archaeological and/or paleontological materials are encountered during the field review, all work within 25 feet of the discovery would be redirected until a qualified archaeologist assesses the finds, consults with City staff, and makes recommendations for the treatment of the discovery. Adverse effects to archaeological and paleontological resources shall be avoided by project activities. Project personnel shall not collect or move any historical or archaeological resources. If avoidance of the deposit is not feasible, the deposit should be evaluated for eligibility for listing in the California Register of Historical Resources. If the deposits are not eligible, mitigation is not necessary. If the deposits are eligible, they shall be avoided by project construction activities, or recovered in accordance with a data recovery plan (see CEQA Guidelines §15126.4(b)(3)(C)) and standard archaeological field methods and procedures. Upon completion of the archaeological assessment (i.e., archaeological excavation and laboratory analysis), the archaeologist shall prepare a report documenting methods and results of the assessment, and shall provide recommendations for the treatment of archaeological materials discovered. The report shall be submitted to the City of Saratoga and the Northwest Information Center.

The following directive will be included in all contract documents/specifications:

“If archaeological or paleontological materials are encountered during project activities, work within 25 feet of the discovery shall be redirected until an archaeologist assesses the finds, consults with City staff and appropriate agencies, and makes recommendations for the treatment of the discovery. Project personnel shall not collect or move any human remains and associated materials.”

Significance after Mitigation: The implementation of these mitigation measures would reduce the impacts to archaeological resources, paleontological resources, or unique geologic features that are encountered during ground disturbance to *less-than-significant* levels.

c) *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

No prehistoric resources were found during field review surveys. Given that the amount of ground disturbing activities associated with development of the proposed trail is minor the chance of destroying potential paleontological resources is also low. Should paleontological resources or a unique geologic feature be discovered mitigation measures CULT-1 and 2 would reduce potential associated impacts to a *less-than-significant* level.

d) *Would the project disturb any human remains, including those interred outside of formal cemeteries?*

There is the possibility that buried archaeological deposits could be present, and accidental discovery could occur. In compliance with CEQA Guidelines Section 15064.5 (f) if archaeological remains are uncovered, work at the place of discovery would be halted immediately until a qualified archaeologist can evaluate the finds. Additionally, if human remains are encountered, excavation or disturbance of the location must be halted in the vicinity of the find, and the County coroner contacted. The procedures detailed in mitigation measure CULT-3 below would be required. Implementation of Mitigation Measure CULT-3 would reduce the potential impact to the disturbance of human remains to *less-than-significant* level.

Mitigation Measure CULT-3: If human remains are encountered during construction that results from approval of the proposed Project, work shall be temporarily halted in the vicinity of the discovered remains and workers shall avoid altering the materials and their context. Once the county coroner is contacted, if it is determined that the remains are Native American, the coroner will contact the Native American Heritage Commission (“NAHC”). The NAHC would then identify the person or persons believed to be most likely descended from the deceased. These descendants will make recommendations regarding the treatment of the remains with appropriate dignity.

Significance after Mitigation: The implementation of this mitigation measure would reduce the impacts to human remains that are encountered during construction to *less-than-significant* levels.

VI. GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

City of Saratoga
Quarry Park-Sanborn County Park Connector Initial Study
Initial Study Checklist

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

An engineering geologic and geotechnical study was completed by Timothy Best in May 2019 (hereafter referred to as “Best Report”). See Best Report attached as Attachment B. The report was based on review of published geologic literature, review of LiDAR-derived elevation models, topographic survey and field review of the four bridge sites. The following discussion is based on the Best Report.

a) *Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving: i) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42; ii) strong seismic ground shaking; iii) seismic-related ground failure, including liquefaction; iv) landslides, mudslides, or other similar hazards?*

i, ii) The Project site is proximate to a potentially active portion of the San Andreas fault.^{10,11} However, the site does not fall within the special studies zone boundary identified on these maps. Since the site does not fall within the special studies boundary, the structures proposed on site are bridges and not habitable structures, and visitors to the park would

¹⁰ State of California, The Resources Agency Department of Conservation, California Division of Mines and Geology, 1974, Castle Rock Ridge Quadrangle, Special Studies Zones.

¹¹ State of California, The Resources Agency Department of Conservation, California Division of Mines and Geology, 1974, Cupertino Quadrangle, Special Studies Zones.

be temporary, the proposed Project would be considered to have a *less-than-significant* impact with respect to the exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving rupture of a known fault or other substantial evidence of a known fault, or strong ground shaking, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map.

- iii, iv) Much of the Project site is within areas where previous occurrences of landslide movement, or local topographic, geologic, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements. Moreover, these maps show that small portions of the Project site are within areas where historic occurrences of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements. As explained in the Best Report, although the proposed trail is located in an area of potentially significant geologic hazards and damage to the trail or trail structures may occur during adverse geologic events (e.g. intense storms and high ground accelerations during earthquakes), the risk to users from the geologic hazards is expected to be low due to the short duration and low frequency of trail use. Therefore the users of the trail and trail bridges, if exercising reasonable common sense, are not expected to be subject to risks from naturally occurring geologic hazards beyond a reasonable level of risk consistent with recreational trail use. As discussed in the description of the Project above, the new structures proposed as a part of the Project would be limited to bridges to facilitate stream crossings. The trail and trail structures will require routine inspection, maintenance and repair as needed to abate the risks from geologic hazards. No residential units would be constructed and there would be no permanent residents on the site. For these reasons, potential impacts would be *less-than-significant*.

- b) *Would the project result in substantial soil erosion or the loss of topsoil?*

Construction of the Project would include grading and excavation. The Project has been designed to minimize erosion by including installation of frequent drain dips to prevent concentration of trail runoff, as well as slash packing and mulch to treat exposed soils outside of the trail tread. The Quarry Park Master Plan includes design guidelines and Conservation Measures that also require restoration of impacted areas to minimize soil erosion (CM-11), the use of native plant species to be planted as ground cover on faces of cut and fill slopes (Resource.26), and preparation of a Stormwater Pollution Prevention (CM-2).

Mitigation Measure GEO-1. Erosion Control.

Any grading for the Project after October 1 shall be completed in dry weather or low rainfall (less than ½ inch per 24 hour period). A minimum of 200 linear feet of straw wattle and erosion control blankets shall be available at staging areas or on site at all times. In the event of 25 percent chance of forecast inclement weather (greater than ½ inch of rainfall in 24 hour period), temporary erosion control measures (e.g. straw wattles, silt fence, erosion control blankets, etc.) shall be installed to protect the section of trail under construction.

Mitigation Measure GEO-2. Stormwater Pollution Prevention.

The contractor will develop and get approval for a Stormwater Pollution Prevention Plan (SWPPP) for the Project.

The SWPPP shall include an erosion control plan and best management practices that will ensure that erosion and sedimentation will be minimized. Construction shall be monitored per SWPPP requirements to ensure that stormwater is being managed to prevent soil erosion and water quality impacts.

Significance after Mitigation: The combination of project design, compliance with existing regulations, implementation of applicable measures in the Master Plan, and implementation of Mitigation Measure GEO-1 would ensure that erosion impacts would be avoided and that impacts would be reduced to a *less-than-significant* level.

c) *Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

According to the Best Report, the Project site is located on steep mountainous terrain in an area identified as geologically unstable and as having active landslide areas and unstable soils. As discussed above, structures included as components of the proposed Project would be limited to four bridges. The Best Report includes specifications for trail and bridge design, construction of and lateral pressure on bridge foundations. The Project incorporates the Best Report Recommendations as Project elements. In addition, adherence to mitigation measure GEO-3 would reduce potential impacts to a *less-than-significant* level.

Mitigation Measure GEO-3: Incorporation of Geologic and Geotechnical Recommendations.

The Project will incorporate all recommendations in the Best Report to ensure that impacts related to unstable soil, and potential landslides, subsidence, liquefaction and collapse are minimized.

d) *Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?*

Expansive soils were not identified in the report prepared by Timothy C. Best.

e) *Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?*

The Project does not propose construction of septic tanks or other wastewater disposal systems. Therefore, no impact would result in this respect.

VII. GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

This section analyzes the Project's contribution to global climate change impacts in California through an analysis of Project-related GHG emissions.

a) *Would the project generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment?*

Greenhouse Gas Emissions and Global Climate Change

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHGs, into the atmosphere. The primary source of these GHGs is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs; water vapor, carbon dioxide (CO₂), methane (CH₄), and ozone (O₃) - which are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHGs identified by the IPCC that contribute to global warming to a lesser extent include; nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.

A project does not generate enough GHG emissions on its own to influence global climate change; therefore, this impact analysis measures the Project's contribution to the cumulative environmental impact. GHG emissions would be generated from construction activities and operation of the proposed Project.

Construction Period

Construction emissions are short-term and GHG emissions from future construction activities would nominally contribute to GHG emissions impacts. For this reason, BAAQMD does not identify a significance threshold for project-related construction emissions. However, because operational impacts would be less than significant, construction emissions, which would take place over a relatively short duration compared to operational emissions, would also be considered *less than significant*.

Operational Phase

Operation of the proposed Project would nominally contribute to global climate change through direct emissions of GHG from transportation sources (from the future addition of visitors to the proposed trail). As discussed in section III.b above, the proposed Project falls well below the

600-acre screening level for parks.¹² Therefore, the operational phase GHG emissions are expected to be below the BAAQMD threshold of significance and result in a *less-than-significant* impact.

The City of Saratoga has not adopted a qualified GHG reduction plan. In the absence of an applicable qualified GHG reduction strategy, BAAQMD's adopted screening criteria for development projects are applicable to the Project. As discussed in Section a), the operational phase GHG emissions associated with the proposed Project would not exceed BAAQMD's screening criteria. The Project would be consistent with the existing regulations adopted for the purpose of reducing GHG emissions; therefore, impacts would be *less-than-significant*.

b) *Would the project conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?*

As discussed above in response to criteria VII.a), the Project would result in a *less-than-significant* impact to applicable plans, policies, or regulations of an agency adopted for the purpose of reducing the emissions of GHGs.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

¹² Bay Area Air Quality Management District, 2017, CEQA Guidelines Updated May 2017, Table 3-1 Criteria Air Pollutants and Precursors Screening Level Sizes.

City of Saratoga
Quarry Park-Sanborn County Park Connector Initial Study
Initial Study Checklist

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people living or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people living or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) *Would the project create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?*

The Project would include the development of a public trail and would not involve the routine transport, use or disposal of hazardous materials. Therefore, a significant hazard related to transport, use or disposal of hazardous materials would not be created and related impacts would be *less-than-significant*.

b) *Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

While construction of the park could involve the presence of some hazardous materials germane to construction activities, these construction activities would be relatively minor and as such would not create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment. Also, as discussed in response to criteria a) in section IX, Hydrology and Water Quality, approval of the proposed Project would be contingent upon compliance with all applicable water quality standards and waste discharge requirements. As a result, a *less-than-significant* impact would occur.

c) *Would the project emit hazardous emissions or handle hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?*

The proposed Project would not emit a significant amount of hazardous emissions or involve a significant amount of hazardous materials. Moreover, there are no schools located within a quarter mile of the Project site. Therefore, a *no impact* would occur in this respect.

d) *Would the project be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?*

The proposed Project site is not included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5.¹³ Therefore, development of the proposed Project would not create a hazard to the public or the environment in this respect and *no impact* would occur.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people living or working in the project area?*

The closest public airport or public use airport to the Project site is the Norman Y. Mineta San Jose International Airport, located approximately 16 miles north east of the Project site. The Project site is not within the Airport Influence Area (AIA) identified in the Comprehensive Land Use Plan prepared for the airport. For these reasons *no impact* would occur with respect to the Project resulting in a safety hazard for people living or working in the area of the Project.

f) *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people living or working in the project area?*

There are no private airports in the direct vicinity of the Project site. The closest private airstrip is the Regional Medical Center San Jose H2 Heliport, located at 2425 Samaritan Drive which is located approximately 10 miles from the Project site. Due to the physical separation that exists, development of the proposed Project would have no effect on the operations of this helipad and the presence of the helipad would not present additional risks to the safety of people in the vicinity of the Project site. Therefore, *no impact* would result with respect to safety hazards for peoples living or working in the vicinity of the Project site.

g) *Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

The Project would result in the development of a public trail. Implementation of the trail is expected to result in a modest increase in use of Quarry Park. The Project would not alter roadways or substantially increase traffic congestion in the City of Saratoga or the unincorporated areas of Santa Clara County, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

¹³ California Department of Toxic Substances Control, EnviroStor, Hazardous Waste and Substances Site List, <http://www.envirostor.dtsc.ca.gov>, accessed August 7, 2017.

The Project would not alter existing emergency response procedures, and existing service roads on site would be available for emergency services vehicles. Therefore, a *less-than-significant* impact would occur.

h) *Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

On the Fire Hazard Severity Zones in State Responsibilities Areas map prepared by Cal Fire, the site is shown to be in a “high” Fire Hazard Severity Zone, where the categories are moderate, high, and very high. Because the Project is subject to the Quarry Park Master Plan, that Plan’s fire safety provisions, including bans on open fires and barbeque pits on site and complying with relevant City codes with respect to required access for fire protection services would serve to reduce potential impacts related to the risks from wildland fires.

The area adjoining the Project site includes open woodland and heavily wooded residential areas. The development of the proposed trail would not entail the addition of residential units and would not serve to increase fire risk on or off site which could increase the risk to surrounding properties. Moreover, new structures on the Project site would be limited to retaining walls and bridges at stream crossings. People within the Project site would be temporary visitors, and as previously noted, trail regulations would ban open fires. As a result, the additional structures adjacent to wildlands would not be significant structures and the risk to people would be minimized by virtue of the visitors being temporary. Therefore, the Project would not increase the risk of wildland fire, new structures would be minor, visitors would be temporary, and elements of the proposed Project would reduce the risk of fire, the exposure of people or structures to a significant loss, injury or death involving wildland fires would be minimized to the maximum extent practicable. Related impacts would be *less-than-significant*.

IX. HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a significant lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

City of Saratoga
Quarry Park-Sanborn County Park Connector Initial Study
Initial Study Checklist

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j) Potentially be inundated by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) *Violate any water quality standards or waste discharge requirements?*

Water quality in surface and groundwater bodies is regulated by the State and Regional Water Quality Control Boards ("RWQCB"s). The San Francisco Bay RWQCB is responsible for implementation of State and federal water quality protection guidelines in the vicinity of the proposed Project area. The RWQCB implements the Water Quality Control Plan (Basin Plan), a master policy document for managing water quality issues in the region.¹⁴

¹⁴ San Francisco Bay Regional Water Quality Control Board's website.
<http://www.swrcb.ca.gov/rwqcb2/>, accessed on May 5, 2019.

Runoff water quality is regulated by the federal National Pollution Discharge Elimination System (NPDES) Nonpoint Source Program (established through the Clean Water Act). The NPDES program objective is to control and reduce pollutants to water bodies from nonpoint discharges. The program is administered by the California RWQCBs. The Project site would be under the jurisdiction of the San Francisco Bay RWQCB.¹⁵

The City of Saratoga is a member agency in the Santa Clara Valley Urban Runoff Pollution Prevention Program, which helps to reduce the amount of runoff pollution by incorporating regulatory, monitoring and outreach measures aimed at reducing pollution in urban runoff to the "maximum extent practicable," to improve the water quality of South San Francisco Bay and the streams of the Santa Clara Valley. The Program is organized, coordinated and implemented in accordance with a Memorandum of Agreement (MOA) signed by each Co-permittee, including the City of Saratoga. The MOA was signed in 1990 and updated in 1999, 2005 and 2006. It covers the responsibilities of each Co-permittee and provides a cost-sharing formula for joint expenditures.

Construction of the trail would be subject to all applicable water quality standards as required by the Santa Clara Valley Urban Runoff Pollution Prevention Program and waste discharge requirements. Moreover, pursuant to federal law, since the Project would disturb at least one acre of soil, prior to issuance of a building permit, a Storm Water Pollution Prevention Plan (SWPPP) would be required. This SWPPP would ensure that soil erosion is minimized and hazardous construction materials are adequately contained. Compliance with these provisions would result in a *less-than-significant* impact.

- b) *Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a significant lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*

The Project would not alter or deplete groundwater supplies and would not change current groundwater recharge conditions. Trail users would use existing composting toilets and drinking water fountains within Quarry Park. Due to the relatively nominal amount of water used within the site, the Project would not result in a level of water use that would have the potential to substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a significant lowering of the local groundwater table level. Therefore, a *less-than-significant* impact would result.

¹⁵ San Francisco Bay Regional Water Quality Control Board's website.
<http://www.swrcb.ca.gov/rwqcb2/>, accessed on May 5, 2019.

- c) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion, siltation on- or off-site?*

The Project proposes construction of a trail and bridges within the riparian zone. However, the Project has been designed to incorporate clear span bridges to avoid disturbance to the stream bed and banks. The Project design also incorporates out-slopes of 3-5 percent and frequent reverse grade dips to ensure that trail runoff is not concentrated, thus minimizing alteration of the site's existing drainage pattern. The conversion of existing roads into trails will minimally alter the drainage of the site; however, due to the proposed design of these trails and using industry standard techniques for stormwater management, these impacts would not be significant. Additionally, the habitat enhancement element of the Master Plan would include improvements to the hydrology of the portion of Saratoga Creek that is on the Project site including buffers around the creek. Thus, implementation of the proposed Project would have minimal impacts on the hydrology of the site, in part as a result of the passive use nature of the Project, and the proposed measures which would enhance the hydrological components of the site. Therefore, impacts would be *less than significant*.

- d) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial flooding on- or off-site?*

See Response in part c) above. The existing drainage pattern of the site would not be substantially altered and the Project proposes improvements to the site's hydrology to limit potential adverse impacts. As a result, the Project would result in a *less-than-significant* impact in relation to flooding on- or off-site.

- e) *Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?*

The Project does not propose to install impermeable surfaces except for the bridge abutments. These areas would result in a minor additional source of runoff on-site and they would not result in polluted runoff. Moreover, the Project would not result in a connection to any stormwater drainage system. Therefore a *less-than-significant* impact would result.

- f) *Would the project otherwise substantially degrade water quality?*

Outside of the areas discussed above, no aspect of the Project would serve to substantially degrade water quality. Therefore a *less-than-significant* impact would occur.

- g) *Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?*

The proposed Project would not include a residential component. *No impact* would occur.

- h) *Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?*

As shown on Maps prepared by the Federal Emergency Management Agency (FEMA), the site is not within a 100-year flood hazard area.¹⁶ Therefore *no impact* would result in this respect.

- i) *Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?*

As discussed above, the Project site is not within the 100-year floodplain identified by FEMA. As a result, the risk of loss, injury, or death involving flooding would not be significant.

The Saratoga General Plan notes that there are not any critical facilities located within a dam failure inundation area in Saratoga. Maps prepared by the Association of Bay Area Governments (ABAG) show that portions of the Project Site are within the inundation hazard area of the Lake Ranch Reservoir.¹⁷ As described above, there would not be a residential component associated with the proposed Project. As a result, all people on the site would be visitors and their stay would be temporary. This would serve to minimize the risk to people. Therefore, impacts would be *less-than-significant*.

- j) *Would the project potentially be inundated by seiche, tsunami, or mudflow?*

According to maps prepared by the California Department of Conservation, the mountainous Project site is not in an area that is prone to inundation by seiche, tsunami, or mudflow. *No impact* would result.

X. LAND USE

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

¹⁶ Federal Emergency Management Agency, 2009, Flood Insurance Rate Map.

¹⁷ Association of bay Area Governments, 1995, Dam Failure Inundation Hazard map for Saratoga.

City of Saratoga
Quarry Park-Sanborn County Park Connector Initial Study
Initial Study Checklist

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) *Would the project physically divide an established community?*

A Project would have a significant environmental impact if it allowed for development large enough or otherwise configured in such a way as to create a physical barrier or other physical division within an established community. A typical example would be a project that involved creating a new continuous right-of-way, such as a roadway, which would divide a community and impede access between parts of the community. The proposed Project includes no such component.

There are no residential uses that exist on the site. The residential uses that surround the property do not currently use the Project site for travel because there are no roads that currently exist on the site. Implementation of the proposed Project would result in the construction of a public trail on the site. Since there are no established communities on the site and implementation of the Project would not serve to divide the communities that currently surround the site, there is *no impact*.

b) *Would the project conflict with any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*

As discussed in the Project Description, the site is located within Santa Clara County. The Project site is designated as Hillsides in the County General Plan and zoned HS Hillside in the County Zoning Code. Under Section 2.20.010(C) of the Zoning Ordinance, the purpose of the Hillside district, also known as the HS district, is to preserve mountainous lands unplanned or unsuited for urban development primarily in open space and to promote those uses which support and enhance a rural character, which protect and promote wise use of natural resources, and which avoid the risks imposed by natural hazards found in these areas. Permitted uses within the HS District zone include low intensity recreation and land in its natural state.

The City's General Plan designates the project area, which is located primarily within the City's Sphere of Influence ("SOI") but not the city limits, as Hillside Open Space ("OS-H"). Because these lands are outside the City limits, the County planning and zoning laws would apply. The OS-H designation would apply should the area ever be annexed to the City. The Hillside Open Space designation allows uses which support and enhance a rural character, promote the wise use of natural resources and avoid natural hazards. Uses include agriculture, mineral extraction, parks and low intensity recreational facilities, land in its natural state, wildlife refuges and very low intensity residential development.

A small portion of the project area is located within the City limits in the Quarry Park. This land is designated Open Space-Outdoor Recreation. That designation applies to City or County parks. Only recreational facilities (i.e. playground equipment, recreational courts, etc.), structures necessary to support the parks or structures of particular historic value are permitted in these areas.

According to the Section 15-02.010 of the Saratoga Municipal Code, the purpose of the R-OS zone is “[t]o preserve hillside and mountainous land in its natural condition through the establishment of dedicated open space areas, and through environmentally sensitive low density residential use” and “[t]o promote those uses which support and enhance a rural character and preserve important resources such as forests, natural vegetation, watersheds, animal habitat, scenic beauty, recreational areas, open space and public access thereto.” One of the permitted uses within the R-OS zone is related to public park uses, which allows for public parks, trails, and open space. Therefore, since the Project would construct only a public trail maintaining the area in open space, the Project would be consistent with both the County General Plan and Zoning Ordinance, resulting in *no impact*.

c) *Conflict with any applicable habitat conservation plan or natural community conservation plan?*

The cities of Gilroy, Morgan Hill and San Jose, the County of Santa Clara, the Santa Clara Valley Transportation Authority and the Santa Clara Valley Water District have collaborated to create the Santa Clara Valley Habitat conservation Plan. However, the Project site does not fall within the plan’s study area and since there are no other applicable habitat conservation plans, *no impact* would result from the Project.

XI. MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region or the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) *Would the project result in the loss of availability of a known mineral resource that would be of value to the region or the state?*

The Saratoga General Plan, Open Space and Conservation Element, notes that mineral resources exist in the vicinity of the Project site but states that these resources are primarily limited to sandstone and shale. The City’s General Plan does not identify significant mineral resources that

exist within the city limits. As a result, implementation of the proposed Project would not propose any land use changes that could result in the loss of known mineral resources or substantially limit the availability of mineral resources over the long term. Therefore, the Project would have *no impact* on mineral resources.

b) *Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?*

See response a) above. The Project would not result in the loss of availability of a locally important mineral resource recovery site. As a result, *no impact* would occur.

XII. NOISE

Would the project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generate excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) *Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies?*

The Santa Clara County Noise Ordinance (Chapter VII: Control of Noise and Vibration) contains the following applicable sections:

Sec. B11- 192. Exterior noise limits.

(1) Maximum Permissible Sound Levels by Receiving Land Use.

(a) The noise standards for the various receiving land use categories as presented in Table 4.9- 7 shall apply to all such property within any zoning district.

(b) No person shall operate or cause to be operated any source of sound at any location within the unincorporated territory of the county or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property either incorporated or unincorporated, to exceed:

(i) The noise standard for that land use as specified in Table 4.9- 7 for a cumulative period of more than

thirty (30) minutes in any hour; or

(ii) The noise standard plus five (5) dB for a cumulative period of more than fifteen (15) minutes in any hour; or

(iii) The noise standard plus ten (10) dB for a cumulative period of more than five (5) minutes in any hour; or

(iv) The noise standard plus fifteen (15) dB for a cumulative period of more than one (1) minute in any hour; or

(v) The noise standard plus twenty (20) dB or the maximum measured ambient, for any period of time.

(c) If the measured ambient level exceeds that permissible within any of the first four (4) noise limit

categories above, the allowable noise exposure standard shall be increased in five dB increments in each

category as appropriate to encompass or reflect said ambient noise level. In the event the ambient noise

level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be

increased to reflect the maximum ambient noise level.

(d) If the noise measurement occurs on a property adjacent to a different land use category, the noise level

limit applicable to the lower land use category, plus five (5) dB, shall apply.

(e) If for any reason the alleged offending noise source cannot be shut down, the ambient noise must be

estimated by performing a measurement in the same general area of the source but at a sufficient distance

such that the noise from the source is at least ten (10) dB below the ambient in order that only the ambient

level be measured. If the difference between the ambient and the noise source is five (5) to ten (10) dB,

then the level of the ambient itself can be reasonably determined by subtracting a one- decibel correction to

account for the contribution of the source.

(2) Correction for Character of Sound: In the event the alleged offensive noise contains a steady, audible tone

such as a whine, screech or hum, or contains music or speech conveying informational content, the standard

limits set forth in table B11- 192 shall be reduced by five (5) dB.

(Ord. No. NS- 517.18, 9- 22- 81; Ord. No. NS- 517.54, §§ 9, 10, 6- 8- 93)

Table 1 below lists noise standards for various uses in the County Noise Ordinance (Ord. No. NS- 517.18, 9- 22- 81; Ord. No. NS- 517.54, §§ 9, 10, 6- 8- 93). The indoor standards apply to noise produced by exterior noise sources.

Table 1 County Exterior Noise Limits (Levels not to be exceeded more than 30 minutes in any hour)		
Receiving Land Use Category	Time Period	Noise Level (dBA)
One- and Two- Family	10:00 p.m.- - 7:00 a.m.	45
Residential	7:00 a.m.- - 10 p.m.	55
Multi-Family Dwelling	10:00 p.m.- - 7:00 a.m.	50
Residential Public Space	7:00 a.m.- - 10:00 p.m.	55
Commercial	10:00 p.m.- - 7:00 a.m.	60
	7:00 a.m.- - 10:00 p.m.	65
Light Industrial	Any Time	70
Heavy Industrial	Any Time	75

Sec. B11- 193. Interior noise standards.

(1) Maximum Permissible Dwelling Interior Sound Levels:

(a) The interior noise standards for multifamily residential dwellings as presented in Table 4.9- 8 shall apply,

unless otherwise specifically indicated, within all such dwellings.

County Interior Noise Standards		
Type of Land Use	Time Interval	Allowable Interior Noise Level (dBA)
Multifamily dwelling	10:00 p.m.- - 7:00 a.m.	35
	7:00 a.m.- - 10:00 p.m.	45

(b) No person shall operate or cause to be operated within a dwelling unit any source of sound or allow the creation of any noise which causes the noise level when measured inside a neighboring receiving dwelling unit to exceed:

(i) The noise standard as specified in Table 4.9- 8 for a cumulative period of more than five (5) minutes in any hour; or

(ii) The noise standard plus five (5) dB for a cumulative period of more than one (1) minute in any hour;

or

(iii) The noise standard plus ten (10) dB or the maximum measured ambient, for any period of time.

(c) If the measured ambient level exceeds that permissible within any of the noise limit categories above, the allowable noise exposure standard shall be increased in five- dB increments in each category as appropriate to reflect said ambient noise level.

(2) Correction for Character of Sound: In the event the alleged offensive noise contains a steady, audible tone such as a whine, screech or hum, or contains music or speech conveying information content, the standard

limits set forth in table B11- 193 shall be reduced by five (5) dB.

(Ord. No. NS- 517.18, 9- 22- 81)

Sec. B11- 194. Prohibited acts.

2.6. Construction/demolition.

(a) Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekdays and Saturday hours of 7:00 pm and 7:00 am, or at any time on Sundays or holidays, such that the sound there from creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance.

(b) Where technically and economically feasible, construction activities shall be conducted in such a manner

that the maximum noise levels at affected properties will not exceed those listed in the following schedule:

(i) Mobile equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

The Santa Clara County Code specifies the following related to helicopters:

Sec. B11-154. - Prohibited acts (at § 14)

Helicopters. Operating or permitting to be operated any helicopter which violates nighttime provisions of Section B11-152 or which causes a noise that exceeds 80 dBA during the day in residential. County Code Sec. B11-154 also specifies a 55 dBA maximum exterior noise not to be exceed for more than 30 mins in an hour.

Additionally, the City of Saratoga's General Plan Noise Element recognizes that the Big Basin Way segment of SR 9 adjacent to the Project site, has an existing DNL of 68 dB, setback 50 feet from the roadway.

Implementation of the proposed project could have the following noise-related effects: 1) residents surrounding the project site could be exposed to short-term construction-related noise; 2) park users could be exposed to traffic noise from SR 9; and 3) residents surrounding the project site could be exposed to an incremental increase in ambient noise levels due to park use. Each of these potential noise impacts, and the relationship of each impact to standards set forth in the County's Noise Ordinance, is discussed below.

Construction Noise Impacts. Construction of the proposed project would involve minor earthwork and grading, and could involve the limited use of mini-excavator(s), mini dozer, motorized tote/wheelbarrow, ATV with trailer, chainsaw, hand tools, portable mixer, chain saws, and tree rigging. In addition, a helicopter may be necessary to transport bridge construction materials to the bridge locations. Construction of the proposed Project would extend over a period of 18-24 months. Construction-related short-term noise levels would be higher than existing ambient noise levels in the vicinity of the Project site but would end once construction is completed. Site preparation, which includes vegetation removal, excavation and grading, tends to generate the highest noise levels, because the noisiest construction equipment is earthmoving equipment. Typical operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three or four minutes at lower power settings. The maximum noise level for these pieces of equipment under normal conditions is approximately 85 dB at 50 feet.¹⁸ However, nearby residences would not be exposed to such a level of noise because noise levels decrease at a rate of approximately 6 dBA per doubling of distance. Therefore, a sound as perceived at 200 feet from its source, would be about 12 dBA less loud than it would be at approximately 50 feet from the source. Additionally, topographic features of the site affect the attenuation of noise.

¹⁸ Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.

As described in the Project description, helicopter noise would also be a component of construction. The proposed helicopter operation would be limited to use for delivery of bridge components during construction. The pickup and drop off points would be located more than 1500 feet from the nearest residences and from the winery buildings. Use of the helicopter if needed would be for a limited number of days (one to two days maximum) and for short durations during those days. According to the Helicopter Association International a helicopter flying at 500 feet produces noise of approximately 87 dB.¹⁹ If used, a helicopter would operate intermittently for a limited number of days to transport bridge components to a staging area and then deliver them to each construction area. Because nearest receptors are more than 1500 feet from the construction and staging areas, and because helicopter use would be limited, disturbance to area residents is expected to be less than significant.

The County Noise Ordinance specifies that maximum noise levels from construction equipment is 75 dBA for mobile equipment (i.e., 7:00 am-7:00 pm) and 60 dBA for stationary equipment during the day. The closest noise sensitive receptors to the eastern terminus of the trail are located within 800 to 900 feet of site where grading would occur. At this distance, the residences would be exposed to construction noise levels from mobile equipment of up to 61 dBA L_{max} . At the western terminus of the trail, the closest receptors would be located on the Domaine Eden winery property, which is within approximately one quarter mile of the trail. At this distance, visitors at the winery could experience construction noise levels of less than 60 dBA L_{max} for the brief time that the final segment of the trail is being constructed. However, this level of construction noise in close proximity to the winery buildings would be intermittent and temporary (lasting only for a period of approximately one to two weeks) and would therefore be considered less than significant.

Operation Noise Impacts. The proposed project is expected to modestly increase park usage, however park usage is not expected to generate substantial and on-going noise because the site would be used as a passive park with low-intensity uses. In addition, noise impacts on park users would be minimal due to the distance of passive recreational uses from SR 9 and intervening topography and vegetation. Landscape maintenance equipment is exempt from noise- limiting provisions. As a result, the Project would result in *less-than-significant* impacts in relation to the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies.

Impacts from temporary construction noise may occur. Implementation of Mitigation Measure NOI-1 mitigation measures would reduce the potential noise impact to a *less-than-significant* level.

Mitigation Measure NOI-1: The Santa Clara County Municipal Code limits construction activities to 7:00 a.m. to 7:00 p.m., Monday through Friday and prohibits construction on Sundays and legal holidays. However, the City of Saratoga's Noise Ordinance is more

¹⁹ <https://hearinghealthmatters.org/lawandhearing/2011/helicopter-noise/>

restrictive and limits construction activities to 7:30 a.m. to 6:00 p.m. on weekdays and 9:00 a.m. and 5:00 p.m. on Saturday. Therefore, Project construction shall be limited to times specified in the City's Noise Ordinance pursuant to Article 7-30 of the City's Municipal Code.

Significance after Mitigation: Implementation of Mitigation Measure NOI-1 would reduce future construction noise impacts associated with the proposed Project to a *less-than-significant* level.

b) *Would the project result in exposure of persons to or generate excessive groundborne vibration or groundborne noise levels?*

Construction activities can generate varying degrees of ground vibration, depending on the construction procedures, construction equipment used, and proximity to vibration-sensitive uses. The nearest vibration-sensitive structures are residential buildings approximately 800 to 900 feet from the portions of the site where construction activities would occur. Vibration impacts can be in the form of damage to structures or can involve annoyance to nearby sensitive land uses. For the former, building damage is not a factor for normal projects, with the occasional exception of blasting and pile-driving during construction. Construction of the trail would not involve rock blasting, pile-driving, or heavy construction equipment, and vibration-induced structural damage would not occur. Regarding vibration annoyance, the Federal Transit Administration (FTA) criterion for perceptible levels of vibration during the daytime is 78 vibration velocity decibels (VdB).²⁰ Vibration levels from heavy construction equipment would be limited due to the type of construction equipment that would be used within the Project site. Since Project construction activities would be limited by equipment type and occur for short durations, no significant vibration impact from exposure of persons to excessive levels of vibration would occur. In addition, Mitigation Measures NOI-1 would serve to reduce potential impacts resulting from construction. As a result, impacts from groundborne vibration and groundborne noise would be *less-than-significant*.

c) *Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

Noise impacts during the operational phase of the park would not cause substantial noise increases to nearby receptors from visitors, sporadic maintenance functions, or from Project-related traffic flows. As a result, noise impacts would be *less than significant*, and no mitigation would be required.

²⁰ Federal Transit Administration (FTA), 2006. *Transit Noise and Vibration Impact Assessment*. U.S. Department of Transportation. FTA-VA-90-1003-06.

d) *Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

Based on the limited duration of construction activities, scope of future construction activities, and the time-of-day constraints in the Noise Ordinance, included as Mitigation Measure NOI-1, impacts regarding substantial temporary or periodic increase in ambient noise levels in the Project vicinity would be *less than significant*.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels*

There are no public or private airports that are near the City of Saratoga. Norman Y. Mineta San Jose International Airport is approximately 16 miles away. While aircraft associated with this facility may fly over Saratoga and be of concern to residents, the Project site is located well outside the 65 dBA CNEL noise contours for this facility and, as such, there would be *no impact*.

f) *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

See response e) above. The Project site is not located within the vicinity of a private airstrip, and as a result, *no impact* would occur.

XIII. POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) *Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

The proposed Project does not entail the development of residential housing nor would the Project result in the extension of roads or other infrastructure off site. Moreover, all of the infrastructure proposed (i.e., bridges at stream crossings) would be limited to use on site. Since

there would be no direct or indirect population growth associated with the proposed Project, there would be *no impact* related to substantial population growth.

b) *Would the project displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere?*

No housing units are located within the Project site. As a result, *no impact* would occur.

c) *Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*

There are currently no people residing on the Project site, therefore there are no people on the site to displace and the Project would have *no impact*.

XIV. PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

a) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:*

Fire protection?

Based on communications with Mac Bala, Deputy Fire Marshal of the Santa Clara County Fire Department, the extension of fire protection services to the Project site would not result in

construction of new facilities or result in substantial adverse impacts associated with the connector trail.²¹ Therefore, *no impact* would occur.

Police protection?

Based on communications with Richard Urena, Captain of the Santa Clara County Office of the Sheriff, the extension of police protection services to the Project site would not result in construction of new facilities or result in substantial adverse impacts associated with the connector trail.²² Therefore, *no impact* would occur.

Schools?

As discussed above, the proposed Project would not include a residential component. As a result, the Project would not result in an increase in demand for school services, and the need for additional school facilities as a result of the proposed Project would not occur. *No impact* would occur.

Parks?

Implementation of the proposed Project would include the development of a connector trail from the Saratoga Quarry Park to the boundary of Sanborn County Park. This Initial Study/Mitigated Negative Declaration (IS/MND) is intended to assess whether the proposed Project would have a significant adverse impact on the environment. With implementation of the recommended mitigation measures, all impacts of the Project on parks would be reduced to a *less-than-significant* level.

Other public facilities?

There are no other facilities that would be adversely impacted by the proposed Project. Therefore *no impact* would occur.

XV. RECREATION

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
J.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

²¹ Personal communication between Emma Burkhalter and Mac Bala, Deputy Fire Marshal, Santa Clara County Fire Department, May 15, 2019.

²² Personal communication between John Cherbone and Richard Urena, Captain, Santa Clara County Office of the Sheriff, May 16, 2019.

City of Saratoga
Quarry Park-Sanborn County Park Connector Initial Study
Initial Study Checklist

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
J.				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated?*

Implementation of the proposed Project would not increase the permanent population of Saratoga or Santa Clara County and therefore, the Project would not create a substantial additional demand on existing parks or recreational facilities such that the facilities would be substantially deteriorated. Instead, implementation of the proposed Project would increase recreational options in Saratoga and in the County, which could be considered a beneficial impact to recreation. Therefore, *no impact* would occur.

b) *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment?*

Implementation of the proposed Project would include the development of a connector trail from the City's Quarry Park to the Sanborn County Park. With implementation of the recommended mitigation measures, all impacts of the Project on recreational facilities would be reduced to a *less-than-significant* level.

XVI. TRANSPORTATION/TRAFFIC

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

City of Saratoga
Quarry Park-Sanborn County Park Connector Initial Study
Initial Study Checklist

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) *Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?*

The proposed Project would generate a modest number of additional trips over existing conditions attributable to hikers and equestrians interested in using the new trail. During the construction phase of the Project, additional traffic would be generated by trucks associated with construction activities. During the operation phase, visitors to the park would generate additional trips getting to and from the park.

Typically, trail users are most likely to use trails during non-peak hours on weekdays and on weekends. Given that the majority of the trips would occur during non-peak hours on weekdays and weekends, it is not expected that traffic generated by the Project would conflict with the effectiveness of the local roadway system, particularly considering that the segment of SR 9 adjacent to the Project site improved from Level of Service (LOS) C in 2006, to LOS B through

2012.²³ Additionally, given the small number of vehicle trips generated by the Project, there would be a *less-than-significant* impact in relation to the level of service standards established by the Santa Clara County Congestion Management Program.²⁴

b) *Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?*

See response a) above. As a result of the Project, a *less-than-significant* impact to the applicable congestion management program would occur.

c) *Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*

As discussed above in Section VII, Hazards and Hazardous Materials, the Project site is not located within the Airport Influence Area of any of the airports in the region. The closest public airport or public use airport to the Project site is the Norman Y. Mineta San Jose International Airport. The airport is approximately 16 miles from the Project site. Since the Project would not include components that would have any impact on air traffic patterns and the closest airport is 16 miles away, the Project would not change air traffic patterns, and *no impact* would occur.

d) *Would the project substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?*

The Project would not introduce any features along roadways or at intersections adjacent to the site that would constitute a design hazard, introduce incompatible uses or affect emergency access to the Project site. Project site users would use existing roadways and available access through the Saratoga Quarry Park. Therefore, there would be *less-than-significant* impact related to design features, incompatible uses, or emergency access.

e) *Would the project result in inadequate emergency access?*

See response d) above. Vehicular access to the Project site would be from existing access points on Congress Springs Road. Emergency access to Quarry Park would not be altered as a result of the Project therefore, impacts related to emergency access would be *less-than-significant*.

f) *Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?*

The Project site is located in an open space area on private land and has no direct connections to public transit or designated bicycle or pedestrian facilities on existing roadways. The proposed

²³ Santa Clara Valley Transportation Authority, 2017, 2017 Congestion Management Program.

²⁴ Santa Clara Valley Transportation Authority, 2017, 2017 Congestion Management Program.

Project would involve efforts to create additional linkages in the regional trail network, which would serve to improve the performance of the existing transportation system and existing recreational facilities. As a result, the proposed Project would not adversely affect the performance of public transit, bicycle, or pedestrian facilities, and a *less-than-significant* impact would occur.

XVII. UTILITIES & SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) *Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*

As discussed above in Section IX. Hydrology and Water Quality, the Project does not propose construction of septic tanks or other wastewater disposal systems. As a result, the Project would

result in *no impact* in relation to wastewater treatment requirements of the Regional Water Quality Control Board.

b) *Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

The Project would not involve provision of new water or wastewater treatment facilities. Due to the nature of the Project, the modest increase in trail use is expected to result in a nominal increase in water demand within Quarry Park and would not require the construction or expansion of facilities. As a result, the Project would result in a *no impact*.

c) *Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

The Project proposes to construct an unpaved trail and four bridge stream crossings. New stormwater drainage facilities would be limited to drainage dips installed on the trail to manage stormwater runoff. Therefore, the Project would have a *less-than-significant* impact on stormwater drainage facilities.

d) *Would the project have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?*

The proposed project does not include use of a water supply. Trail users will have access to existing drinking fountains on the Saratoga Quarry Park site and no irrigation is proposed. Due to the nature of the Project, and the modest increase in trail use anticipated, the amount of water demand within the Project site is expected to be a nominal amount. As a result, it is expected that the Project would have sufficient water supplies available to meet the demand within the Project site. As a result, impacts would be *less-than-significant*.

e) *Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.*

See response to a) above.

f) *Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?*

Trail users would make use of trash receptacles at Quarry Park. In accordance with the Amended and Restated Franchise Agreement between the West Valley Solid Waste Management Authority and West Valley Collection and Recycling, LLC the designated disposal site for solid waste collected in the City of Saratoga is the Guadalupe Landfill at 15999 Guadalupe Mines Road in San Jose. The solid waste facility permit on file for the Guadalupe Landfill lists the estimated closure date of the facility to be 2028. Additionally, it is not anticipated that implementation of the proposed Project would substantially increase the volume of solid waste

collected in Saratoga. Therefore, this facility would have sufficient capacity to accommodate the Project's solid waste disposal needs and a *less-than-significant* impact would result.

g) *Would the project not comply with federal, state, and local statutes and regulations related to solid waste?*

Conformance with the requirements of the Amended and Restated Franchise Agreement between the West Valley Solid Waste Management Authority and West Valley Collection and Recycling, LLC and permit SWIS NO 43-AN-0015 would ensure compliance with all federal, State and local statutes and regulations related to solid waste and a *less-than-significant* impact would result.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

K.	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) *Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

As discussed above and in the Biological Resources Report, implementation of the proposed Project would result in the construction of a connector trail. The Project design minimizes impacts to biological resources to the degree practicable and includes mitigation measures to avoid impacts to biological resources and to mitigate impacts when avoidance isn't feasible. Additionally, the Project includes historic preservation measures which would serve to protect the historical resources on the Project site. For these reasons, the Project would have a *less-than-significant* impact in this respect.

b) *Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

The development of a connector trail would not significantly contribute to any cumulative effect. As discussed above, the Project's impact on air quality, greenhouse gas emissions, and traffic would all be minimal so that any contribution to cumulative conditions would not be considerable. There are no other projects which in combination with the effects of this Project would result in a cumulatively considerable effect. A *less-than-significant* impact would result in this respect.

c) *Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

As discussed above, overall, the proposed Project would have a positive impact on human beings. With elements of the Project that would serve to enhance natural habitats and preserve historical resources, allowing for public access to the site would increase recreational opportunities in the area, reducing the demand on other recreational facilities in the area, and give the public access to the natural features of the site which were previously inaccessible. Therefore, the Project would result in less-than-significant impacts.

Attachment A
Biological Resources Background Report



H. T. HARVEY & ASSOCIATES

Ecological Consultants



**Saratoga to Sanborn Trail Project
Biological Resources Report**

Project #4237-01

Prepared for:

Emma Burkhalter
City of Saratoga – Public Works
12777 Fruitvale Avenue
Saratoga, CA 95070

Prepared by:

H. T. Harvey & Associates

May 2, 2019

Table of Contents

Table of Contents	ii
Figures	iii
Tables	iii
Appendices	iii
List of Preparers	iv
Section 1. Introduction	5
1.1 Project Description and Location	5
1.2 Project Components	5
Section 2. Methods	10
2.1 Background Review	10
2.2 Site Visits	10
Section 3. Regulatory Setting	11
3.1 Federal	11
3.1.1 Clean Water Act	11
3.1.2 Federal Endangered Species Act	11
3.1.3 Magnuson-Stevens Fishery Conservation and Management Act	12
3.1.4 Federal Migratory Bird Treaty Act	12
3.2 State	12
3.2.1 Clean Water Act Section 401/Porter-Cologne Water Quality Control Act	12
3.2.2 California Endangered Species Act	13
3.2.3 California Environmental Quality Act	14
3.2.4 California Fish and Game Code	15
3.3 Local	16
3.3.1 Santa Clara Tree Preservation and Removal Ordinance	16
3.3.2 City of Saratoga Tree Ordinance	17
Section 4. Environmental Setting	18
4.1 General Project Area Description	18
4.2 Biotic Habitats	18
4.2.1 Mixed Evergreen Forest	18
4.2.2 Northern Coastal Scrub (Disturbed)	20
4.2.3 Mixed Riparian Forest	21
Section 5. Special-Status Species and Sensitive Habitats	24
5.1 Special-Status Plant Species	24
5.2 Special-Status Animal Species	28
5.3 Sensitive Natural Communities, Habitats, and Vegetation Alliances	29
Section 6. Impacts and Mitigation Measures	39
6.1 Impacts on Special-Status Species	39
6.1.1 Impacts on CRPR 1 or 2 Plants (Less than Significant with Mitigation)	40
6.1.2 Impacts on CRPR 3 or 4 Plants (Less than Significant)	42
6.1.3 Impacts on the California Red-legged Frog (Less than Significant with Mitigation)	43
6.1.4 Impacts on the Santa Cruz Black Salamander and California Giant Salamander, (Less than Significant with Mitigation)	44
6.1.5 Impacts on the Western Pond Turtle (Less than Significant with Mitigation)	45
6.1.6 Impacts on the Olive-sided Flycatcher (Less than Significant)	45
6.1.7 Impacts on the San Francisco Dusky-footed Woodrat (Less than Significant with Mitigation)	46
6.1.8 Impacts on Pallid Bats (Less than Significant with Mitigation)	47

6.2	Impacts on Sensitive Communities	49
6.2.1	Impacts on Mixed Evergreen Forest (Less than Significant).....	49
6.2.2	Impacts on Mixed Riparian Forest (Less than Significant with Mitigation).....	49
6.3	Impacts on Wetlands	51
6.4	Impacts on Wildlife Movement	51
6.5	Impacts due to Conflicts with Local Policies	53
6.5.1	Santa Clara Tree Preservation and Removal Ordinance (No Impact)	53
6.5.2	City of Saratoga Tree Ordinance (No Impact).....	54
6.6	Impact due to Conflicts with an Adopted Habitat Conservation Plan	54
6.7	Cumulative Impacts	54
Section 7.	References.....	56

Figures

Figure 1.	Vicinity Map.....	7
Figure 2.	Study Area	8
Figure 3.	Habitat Map	19
Figure 4.	Special-Status Plant Species.....	25
Figure 5.	Special-Status Animal Species	26

Tables

Table 1.	Special-status Animal Species, Their Status, and Potential Occurrence in the Study Area	30
----------	---	----

Appendices

Appendix A.	Plants Observed.....	A-1
Appendix B.	Special-Status Plants Considered for Potential Occurrence.....	B-1
Appendix C.	Detailed Descriptions of Special-Status Animal Species Potentially Occurring in the Study Area.....	C-1

List of Preparers

Steve Rottenborn, Ph.D., Principal/Senior Wildlife Ecologist

Kelly Hardwicke, Ph.D., Senior Plant/Wetland Ecologist

Ginger Bolen, Ph.D., Project Manager/Senior Wildlife Ecologist

Craig Fosdick, M.S., Wildlife Ecologist

Matthew Mosher, B.S., Plant Ecologist

Section 1. Introduction

1.1 Project Description and Location

The Saratoga to Sanborn Trail Project would construct a 2.7 mile (mi) public recreational trail connection from Saratoga Quarry Park to Sanborn County Park in western Santa Clara County (“connector trail”) or (“trail”) (Figure 1). The project would occur on City-owned and privately-owned land, primarily on Assessor Parcel Number 503-73-003 (owned by the San Jose Water Company) with segments crossing through parcels 517-04-011, 517-04-060, 517-04-061, and 503-48-045. The study area is bordered on the north by San Jose Water Company lands and State Route 9, to the east by Saratoga’s Quarry Park, to the south by San Jose Water Company lands, and to the west by privately held parcels and Sanborn County Park. The trail is envisioned to eventually connect to existing County trails within Sanborn County Park and to serve as part of a trail system linking trails in Saratoga to the Skyline-to-the-Sea Trail to form a Saratoga-to-the-Sea trail. The proposed project is included as a proposed trail in the City of Saratoga General Plan (City of Saratoga 2007). The proposed alignment for the trail was selected based on a feasibility study conducted in May 2015 and based on input from City staff, the San Jose Water Company, and the Santa Clara County Parks and Recreation Department staff. The proposed project would be developed as a multi-use facility, emphasizing the project site’s natural features, connections to adjacent open space, and opportunities for hiking and horse-back riding.

The purpose of this report is to describe the biological resources present within the study area (Figure 2), as well as the potential impacts of the proposed project on biological resources. Where necessary, this report also describes measures necessary to reduce impacts to less-than-significant levels under the California Environmental Quality Act (CEQA).

1.2 Project Components

The proposed project would implement a 4- to 5-foot-wide compacted earth trail for the newly constructed portion of the trail in the wooded area. The proposed trail would be designed and constructed in accordance with the guidelines outlined in the Midpeninsula Regional Open Space District’s (MROSD’s) Trail Construction and Maintenance Guidelines. The trail design would conform to and incorporate the natural terrain; avoid long, straight reaches; incorporate out-slopes of 3-5%; incorporate frequent reverse grade dips; and incorporate climbing turns at switchbacks to the extent feasible. Construction of the trail would include implementation of small wood retaining walls, four clear span bridges at stream crossings, and revegetation along the trail as needed. The trail would be inspected by City staff annually to evaluate maintenance needs.

Trail construction would begin at the eastern terminus at Quarry Park and end at the boundary of the private winery at the western boundary of the project site, where it connects to a County trail easement. Extension of the trail is envisioned to continue along the existing roadway and County trail easement that traverses the

winery, cross into Sanborn County Park lands, back through San Jose Water Company lands, and connect to the Sanborn County Park boundary.

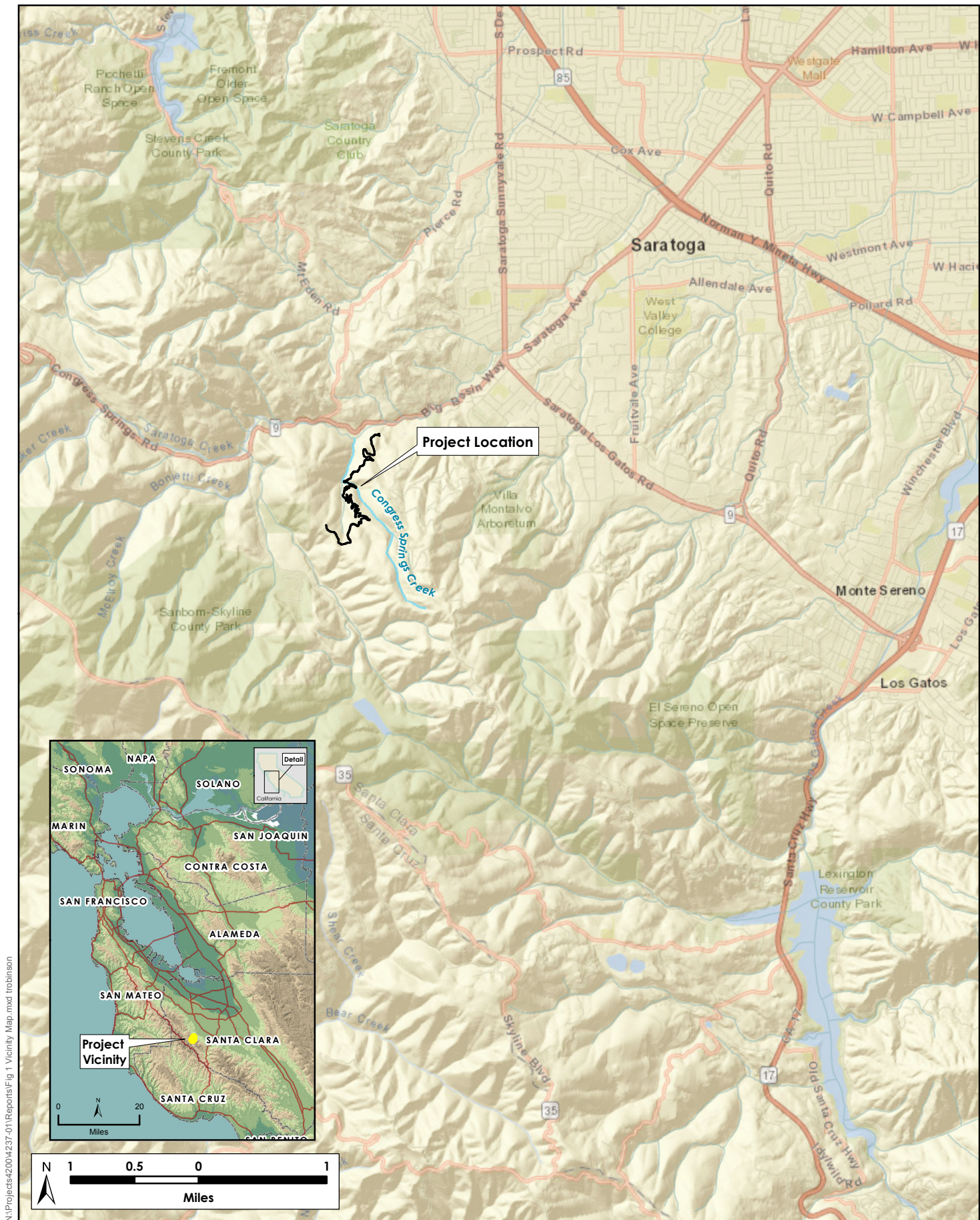
Access to the proposed connector trail would be from Quarry Park. The trail would be used for “out and back” hikes and would also connect to existing trails in Quarry Park. Access would also occur from Sanborn County Park on the west and would connect to existing trails in Sanborn County Park. At this time, however, existing trails in Sanborn County Park in the vicinity of the western terminus of the connector are closed to the public because they are in need of repair, but are planned to be improved for public use in 2020.

Construction and public use of the portion of the trail located on San Jose Water Company property would occur pursuant to a public trail easement. The easement grants the City of Saratoga the right to design, locate, relocate, construct, reconstruct, repair, preserve, maintain, and replace, the trail and trail improvements within the easement area. The easement conditions the final designation of the trail alignment on the City’s completion of environmental review pursuant to CEQA. The easement permits the public to use the trail for walking, jogging, horseback riding, and other related recreational uses.

Due to steep grades and other geographic constraints, most of the proposed trail would not be Americans with Disabilities Act (ADA) accessible. Trail accessibility information would be posted on all trail signage as well as Quarry Park’s circulation map and Sanborn County Park’s circulation map.

Construction. Construction of the proposed trail would extend over a period of 18 to 24 months. Construction during the winter is anticipated to shorten the construction window and to minimize active construction when vegetation is most dense. It is anticipated that only 200 linear feet of trail would be under construction at any given time with permanent grading and erosion control installed as trail construction progresses. Permanent erosion control measures include installation of frequent drain dips to prevent concentration of trail runoff, as well as slash packing and mulch to treat exposed soils outside of the trail tread. Any project grading occurring after October 1 will be completed in dry weather or low rainfall (less than 0.5 inch per 24 hour period). A minimum of 200 linear feet of straw wattle and erosion control blankets would be available at the staging area or on site at all times. In the event of 25% chance of forecast inclement weather (greater than 0.5 inch of rainfall in 24 hour period), temporary erosion control measures (e.g. straw wattles, silt fence, erosion control blankets, etc.) would be installed to protect the section of trail that is currently under construction.

A mini-excavator, mini dozer, and other small equipment would be used on the site for construction of the trail. If feasible, a helicopter may be used to deliver materials along the trail alignment to reduce carrying equipment over land. Minimal grading and excavation would occur as part of development of the proposed trail. Ground disturbance to construct the trail would generally extend to a maximum of 12 inches below ground surface along the trail and several feet at retaining walls and bridge abutments. Grading would be designed so that runoff is directed away from the trail. Existing vegetation, especially native trees and shrubs, would be preserved where possible. The project would include removal or pruning of some tree limbs adjacent to the trail alignment and would require the removal of approximately seven trees over 8 inches in diameter at breast height (dbh).



N:\Projects\42004\237-01\Reports\Fig 1 Vicinity Map.mxd Robinson



H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 1. Vicinity Map
Saratoga to Sanborn Trail Project Biological Resources Report (4237-01)
April 2019



N:\Projects\4200\4237-01\Reports\Fig 2 Biological Study Area.mxd



H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 2. Study Area

Saratoga to Sanborn Trail Project Biological Resources Report (4237-01)
April 2019

The eastern terminus of the trail staging area would be in the Quarry Park upper parking lot. The parking lot would provide parking for construction crew vehicles and storage areas for equipment and materials. Additional staging areas would be located at the intersection of the private winery roadway and the unused road to be converted to trail use, near the intersection of the service road located along the ridge top and a Pacific Gas & Electric (PG&E) access road, and at the end of a second PG&E access road.

Maintenance. The proposed trail would be maintained by the City of Saratoga.

Section 2. Methods

2.1 Background Review

Prior to conducting field work, H. T. Harvey & Associates ecologists reviewed aerial images (Google Inc. 2019) of the project area; a U.S. Geological Survey (USGS) topographic map; the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CNDDDB 2019); and other relevant scientific literature and technical databases. Previous reports prepared for the project vicinity were also reviewed, including the Saratoga Quarry Park Initial Study Mitigated Negative Declaration (City of Saratoga 2014).

In addition, for plants, we reviewed all species on current California Native Plant Society (CNPS) California Rare Plant Rank (CRPR) 1A, 1B, 2A, and 2B lists occurring in the *Castle Rock Ridge, California* 7.5-minute USGS quadrangle and surrounding eight quadrangles (*Cupertino, San Jose West, Los Gatos, Laurel, Felton, Davenport, Big Basin, and Mindego Hill*). Quadrangle-level results are not maintained for CRPR 3 and 4 species, so we also conducted a search of the CNPS Inventory records for these species occurring in Santa Clara County (CNPS 2019). In addition, we queried the CNDDDB (2019) for natural communities of special concern that occur in the project region. For the purposes of this report, the “project vicinity” encompasses a 5-mi radius surrounding the study area.

2.2 Site Visits

Reconnaissance-level field surveys of the study area (Figure 2) were conducted by H. T. Harvey & Associates wildlife ecologist Craig Fosdick, M.S., and plant ecologist Matthew Mosher, B.S., on February 28, 2019. The purpose of these surveys was to provide a project-specific impact assessment for the proposed trail construction. Specifically, surveys were conducted to (1) assess existing biotic habitats and general plant and animal communities in the study area, (2) assess the potential for the project to impact special-status species and/or their habitats, and (3) identify potential jurisdictional habitats, such as waters of the U.S./State and riparian habitat.

Section 3. Regulatory Setting

Biological resources in the study area are regulated by a number of federal, state, and local laws and ordinances, as described below.

3.1 Federal

3.1.1 Clean Water Act

The Clean Water Act (CWA) functions to maintain and restore the physical, chemical, and biological integrity of waters of the U.S., which include, but are not limited to, tributaries to traditionally navigable waters currently or historically used for interstate or foreign commerce, and adjacent wetlands. Historically, in non-tidal waters, U.S. Army Corp of Engineers (USACE) jurisdiction extends to the ordinary high water (OHW) mark, which is defined in Title 33, Code of Federal Regulations (CFR), Part 328.3. If there are wetlands adjacent to channelized features, the limits of USACE jurisdiction extend beyond the OHW mark to the outer edges of the wetlands. Wetlands that are not adjacent to waters of the U.S. are termed “isolated wetlands” and, depending on the circumstances, may be subject to USACE jurisdiction. In tidal waters, USACE jurisdiction extends to the landward extent of vegetation associated with salt or brackish water or the high tide line. The high tide line is defined in 33 CFR Part 328.3 as “the line of intersection of the land with the water’s surface at the maximum height reached by a rising tide.” If there are wetlands adjacent to channelized features, the limits of USACE jurisdiction extend beyond the OHW mark or high tide line to the outer edges of the wetlands.

Construction activities within jurisdictional waters are regulated by the USACE. The placement of fill into such waters must comply with permit requirements of the USACE. No USACE permit will be effective in the absence of Section 401 Water Quality Certification. The State Water Resources Control Board (SWRCB) is the state agency (together with the Regional Water Quality Control Boards [RWQCBs]) charged with implementing water quality certification in California.

Project Applicability: Portions of the study area contain streams that are likely to be claimed as waters of the U.S. by the USACE. Any placement of fill within waters of the U.S. would likely be considered a significant impact under CEQA unless mitigated and would require a Section 404 permit from the USACE.

3.1.2 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) protects federally listed wildlife species from harm or “take”, which is broadly defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct.” Take can also include habitat modification or degradation that directly results in death or injury of a listed wildlife species. An activity can be defined as “take” even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA only if they occur on federal lands.

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have jurisdiction over federally listed, threatened, and endangered species under FESA. The USFWS also maintains lists of proposed and candidate species. Species on these lists are not legally protected under FESA, but may become listed in the near future and are often included in their review of a project.

Project Applicability: Suitable habitat for federally listed plant species does not occur in the study area. One federally listed animal species, the federally threatened California red-legged frog (*Rana draytonii*), may occur in the study area. Incidental take approval from the USFWS would be needed if take of this species were to occur. No critical habitat for any federal species occurs in the study area (USFWS 2019).

3.1.3 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act governs all fishery management activities that occur in federal waters within the United States' 200-nautical-mile limit. The Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans (FMPs) to achieve the optimum yield from U.S. fisheries in their regions. These councils, with assistance from NMFS, establish Essential Fish Habitat (EFH) in FMPs for all managed species. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to recommendations by NMFS.

Project Applicability: No EFH is present in the study area (NMFS 2019).

3.1.4 Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA), 16 U.S.C. Section 703, prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. The MBTA protects whole birds, parts of birds, and bird eggs and nests, and prohibits the possession of all nests of protected bird species whether they are active or inactive. An active nest is defined as having eggs or young, as described by the Department of the Interior in its April 16, 2003 Migratory Bird Permit Memorandum. Nest starts (nests that are under construction and do not yet contain eggs) are not protected from destruction. Per a December 22, 2017 memorandum issued by the U.S. Department of the Interior, the MBTA's prohibition on taking migratory birds and their active nests applies only to direct, purposeful actions, and does not include take incidental to other activities.

Project Applicability: All native bird species that occur in the study area are protected under the MBTA.

3.2 State

3.2.1 Clean Water Act Section 401/Porter-Cologne Water Quality Control Act

The SWRCB works in coordination with the nine RWQCBs to preserve, protect, enhance, and restore water quality. Each RWQCB makes decisions related to water quality for its region, and may approve, with or without

conditions, or deny projects that could affect waters of the State. Their authority comes from the CWA and the State's Porter-Cologne Water Quality Control Act (Porter-Cologne). Porter-Cologne broadly defines waters of the State as "any surface water or groundwater, including saline waters, within the boundaries of the state." Because Porter-Cologne applies to any water, whereas the CWA applies only to certain waters, California's jurisdictional reach overlaps and may exceed the boundaries of waters of the U.S. For example, Water Quality Order No. 2004-0004-DWQ states that "shallow" waters of the State include headwaters, wetlands, and riparian areas. Moreover, the San Francisco Bay Region RWQCB's Assistant Executive Director, has stated that, in practice, the RWQCBs claim jurisdiction over riparian areas. Where riparian habitat is not present, such as may be the case at headwaters, jurisdiction is taken to the top of bank. On April 2, 2019, the SWRCB adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. In these new guidelines, riparian habitat is not specifically described as waters of the State but instead as important buffer habitats to streams that do conform to the State Wetland Definition. The Procedures describe riparian habitat buffers as important resources that may both be included in required mitigation packages for permits for impacts to waters of the State, as well as areas requiring permit authorization from the RWQCBs to impact.

Pursuant to the CWA, projects that are regulated by the USACE must also obtain a Section 401 Water Quality Certification permit from the RWQCB. This certification ensures that the proposed project will uphold state water quality standards. Because California's jurisdiction to regulate its water resources is much broader than that of the federal government, proposed impacts on waters of the State require Water Quality Certification even if the area occurs outside of USACE jurisdiction. Moreover, the RWQCB may impose mitigation requirements even if the USACE does not. Under the Porter-Cologne, the SWRCB and the nine regional boards also have the responsibility of granting CWA National Pollutant Discharge Elimination System (NPDES) permits and Waste Discharge Requirements for certain point-source and non-point discharges to waters. These regulations limit impacts on aquatic and riparian habitats from a variety of urban sources.

Project Applicability: Portions of the study area contain streams that may be claimed as waters of the State by the RWQCB, and the riparian banks of these streams would be considered important buffers. Such areas would fall under the jurisdiction of the San Francisco RWQCB, and a Section 401 Water Quality Certification would be required if any impacts on these waters would occur.

3.2.2 California Endangered Species Act

The California Endangered Species Act (CESA; California Fish and Game Code, Chapter 1.5, Sections 2050-2116) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with CESA, the CDFW has jurisdiction over state-listed species (Fish and Game Code 2070). The CDFW regulates activities that may result in "take" of individuals (i.e., "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under the California Fish and Game Code. The CDFW, however, has interpreted "take" to include the "killing of a member of a species which is the proximate result of habitat modification."

Project Applicability: No suitable habitat for any state listed plant or animal species occurs in the study area. Thus, no state listed species are expected to be impacted by the project.

3.2.3 California Environmental Quality Act

CEQA is a state law that requires state and local agencies to document and consider the environmental implications of their actions and to refrain from approving projects with significant environmental effects if there are feasible alternatives or mitigation measures that can substantially lessen or avoid those effects. CEQA requires the full disclosure of the environmental effects of agency actions, such as approval of a general plan update or the projects covered by that plan, on resources such as air quality, water quality, cultural resources, and biological resources. The State Resources Agency promulgated guidelines for implementing CEQA are known as the State CEQA Guidelines.

Section 15380(b) of the State CEQA Guidelines provides that a species not listed on the federal or state lists of protected species may be considered rare if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in FESA and CESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW or species that are locally or regionally rare.

The CDFW has produced three lists (amphibians and reptiles, birds, and mammals) of “species of special concern” that serve as “watch lists”. Species on these lists are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. Thus, their populations should be monitored. They may receive special attention during environmental review as potential rare species, but do not have specific statutory protection. All potentially rare or sensitive species, or habitats capable of supporting rare species, are considered for environmental review per the CEQA Section 15380(b).

The CNPS, a non-governmental conservation organization, has developed CRPRs for plant species of concern in California in the Inventory of Rare and Endangered Plants (CNPS 2019). The CRPRs include lichens, vascular, and non-vascular plants, and are defined as follows:

- CRPR 1A Plants considered extinct.
- CRPR 1B Plants rare, threatened, or endangered in California and elsewhere.
- CRPR 2A Plants considered extinct in California but more common elsewhere.
- CRPR 2B Plants rare, threatened, or endangered in California but more common elsewhere.
- CRPR 3 Plants about which more information is needed - review list.
- CRPR 4 Plants of limited distribution-watch list.

The CRPRs are further described by the following threat code extensions:

- .1—seriously endangered in California;

- .2—fairly endangered in California;
- .3—not very endangered in California.

Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing as CRPR 1B or 2 are, in general, considered to meet CEQA’s Section 15380 criteria, and adverse effects on these species may be considered significant. Impacts on plants that are listed by the CNPS as CRPR 3 or 4 are also considered during CEQA review, although because these species are typically not as rare as those of CRPR 1B or 2, impacts on them are less frequently considered significant.

Compliance with CEQA Guidelines Section 15065(a) requires consideration of natural communities of special concern, in addition to plant and wildlife species. Vegetation types of “special concern” are tracked in Rarefind (CNDDDB 2019). Further, the CDFW ranks sensitive vegetation alliances based on their global (G) and state (S) rankings analogous to those provided in the CNDDDB. Global rankings (G1–G5) of natural communities reflect the overall condition (rarity and endangerment) of a habitat throughout its range, whereas S rankings reflect the condition of a habitat within California. If an alliance is marked as a G1–G3, all the associations within it would also be of high priority. The CDFW provides the Vegetation Classification and Mapping Program’s currently accepted list of vegetation alliances and associations (CDFW 2019).

Project Applicability: All potential impacts on biological resources will be considered during CEQA review of the project. This biological resources report assesses these impacts to facilitate project planning and CEQA review of the project by the City of Saratoga. Project impacts are discussed in Section 6 below.

3.2.4 California Fish and Game Code

Ephemeral and intermittent streams, rivers, creeks, dry washes, sloughs, blue line streams on USGS maps, and watercourses with subsurface flows fall under CDFW jurisdiction. Canals, aqueducts, irrigation ditches, and other means of water conveyance may also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. A *stream* is defined in Title 14, California Code of Regulations Section 1.72, as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish and other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.” Using this definition, the CDFW extends its jurisdiction to encompass riparian habitats that function as part of a watercourse. California Fish and Game Code Section 2786 defines *riparian habitat* as “lands which contain habitat which grows close to and which depends upon soil moisture from a nearby freshwater source.” The lateral extent of a stream and associated riparian habitat that would fall under the jurisdiction of the CDFW can be measured in several ways, depending on the particular situation and the type of fish or wildlife at risk. At minimum, the CDFW would claim jurisdiction over a stream’s bed and bank. In areas that lack a vegetated riparian corridor, CDFW jurisdiction would be the same as USACE jurisdiction. Where riparian habitat is present, the outer edge of riparian vegetation is generally used as the line of demarcation between riparian and upland habitats.

Pursuant to California Fish and Game Code Section 1603, the CDFW regulates any project proposed by any person that will “substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds.” California Fish and Game Code Section 1602 requires an entity to notify the CDFW of any proposed activity that may modify a river, stream, or lake. If the CDFW determines that proposed activities may substantially adversely affect fish and wildlife resources, a Lake and Streambed Alteration Agreement (LSAA) must be prepared. The LSAA sets reasonable conditions necessary to protect fish and wildlife, and must comply with CEQA. The applicant may then proceed with the activity in accordance with the final LSAA.

Specific sections of the California Fish and Game Code describe regulations pertaining to protection of certain wildlife species. For example, Code Section 2000 prohibits take of any bird, mammal, fish, reptile, or amphibian except as provided by other sections of the code.

The California Fish and Game Code Sections 3503, 3513, and 3800 (and other sections and subsections) protect native birds, including their nests and eggs, from all forms of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “take” by the CDFW. Raptors (i.e., eagles, hawks, and owls) and their nests are specifically protected in California under Code Section 3503.5. Section 3503.5 states that it is “unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.”

Bats and other non-game mammals are protected by California Fish and Game Code Section 4150, which states that all non-game mammals or parts thereof may not be taken or possessed except as provided otherwise in the code or in accordance with regulations adopted by the commission. Activities resulting in mortality of non-game mammals (e.g., destruction of an occupied nonbreeding bat roost, resulting in the death of bats), or disturbance that causes the loss of a maternity colony of bats (resulting in the death of young), may be considered “take” by the CDFW.

Project Applicability: Portions of the study area contain streams and associated riparian habitat that may be regulated by the CDFW under California Fish and Game Code Section 1603. Such areas would fall under jurisdiction of CDFW, and a Section 1603 LSAA would be required if any impacts on these waters would occur. Most native bird, mammal, and other wildlife species that occur in the study area and in the immediate vicinity are protected by the California Fish and Game Code.

3.3 Local

3.3.1 Santa Clara Tree Preservation and Removal Ordinance

The County of Santa Clara Tree Preservation and Removal Ordinance (County Code, §C16.1 to §C16.17) serves to protect all trees having a trunk that measures 37.7 inches or more in circumference (12 inches in diameter) at the height of 4.5 ft above the ground or immediately below the lowest branch, whichever is lower, or in the

case of multi trunk trees a trunk size of 75.4 inches in circumference or more (24 inches or more in diameter). Trees of this size are protected within the following areas of the County:

- Parcels zoned “Hillsides” (3.0 ac or less);
- Parcels within a “-d” (Design Review) combining zoning district;
- Parcels within the Los Gatos Hillside Specific Plant Area

In addition, any tree that because of its history, girth, height, species or other unique quality, is considered significant to the community or recommended by the historic commission can be designated as a heritage tree and, therefore, deemed protected and preserved.

Santa Clara County requires that a replanting or revegetation plan be submitted for all trees to be removed (County Code, §C16.7 (e)). If the trees to be removed are native species, then replacement by the same species is requested if feasible. For non-native species, the County Planning Department may determine the species for planting. All replacement tree plantings must use at least five-gallon stock.

Project Applicability: The study area, which falls within unincorporated Santa Clara County, is zoned “Hillsides”; however, all the parcels are greater than 3 ac in size. Thus, none of the trees within these parcels are considered protected trees. Therefore, no tree removal permit would be required for parts of the study area that fall within unincorporated Santa Clara County.

3.3.2 City of Saratoga Tree Ordinance

According to the City of Saratoga Municipal Code §15-50.050, except as otherwise provided in §15-50.060, it is unlawful for any person to remove, damage, prune, or encroach upon, or cause to be removed, damaged, pruned, or encroached upon any protected tree in the City without first having obtained a tree removal, pruning or encroachment permit issued pursuant to this Article and authorizing the proposed action. A protected tree shall consist of any of the following:

- Any native tree having a diameter at breast height (DBH) of 6.0 inches or greater
- Any other tree having a DBH of 10.0 inches or greater.
- Any street tree, as defined in Section 15-50.020(v), regardless of size.
- Any heritage tree, as defined in Subsection 15-50.020(1) regardless of size.
- Any tree required to be planted or retained as a condition of any approval granted under this Chapter or Chapter 14 of this Code.
- Any tree required to be planted as a replacement, as provided in Section 15-50.170 of this Article. (Amended by Ord. 226 § 2 (part), 2003)

Project Applicability: While most of the study area is located within unincorporated Santa Clara County, the portion of the study area within Quarry Park is located within the City of Saratoga boundary. Project construction may necessitate the removal of protected trees. However, the City’s Tree Ordinance applies only to private development projects. Therefore, a permit would not be required.

Section 4. Environmental Setting

4.1 General Project Area Description

The approximately 6.29-ac study area is located in Saratoga in western Santa Clara County. It is located on the south side of Saratoga Creek and California State Route 9, primarily within the lower Congress Springs Creek drainage (a tributary to Saratoga Creek). The study area is located within the *Castle Rock Ridge, California* 7.5-minute USGS quadrangle on the northern flank of the Santa Cruz Mountains. The area is characterized by steep mountainous terrain dissected by narrow, steep sided V-shaped ravines and stream valleys. Natural slopes range from less than 20% gradient along gently sloping ridgetops and midslope benches to more than 80% along local steep streamside slopes and steep headwall swales. Hillsides are underlain by a series of large-scale deep-seated bedrock landslides, several of which appear periodically active. The steep slopes that characterize much of the area are also subject to shallow debris slide and debris flow landslide processes. Small debris fans are found at the mouths of many of the steep drainages.

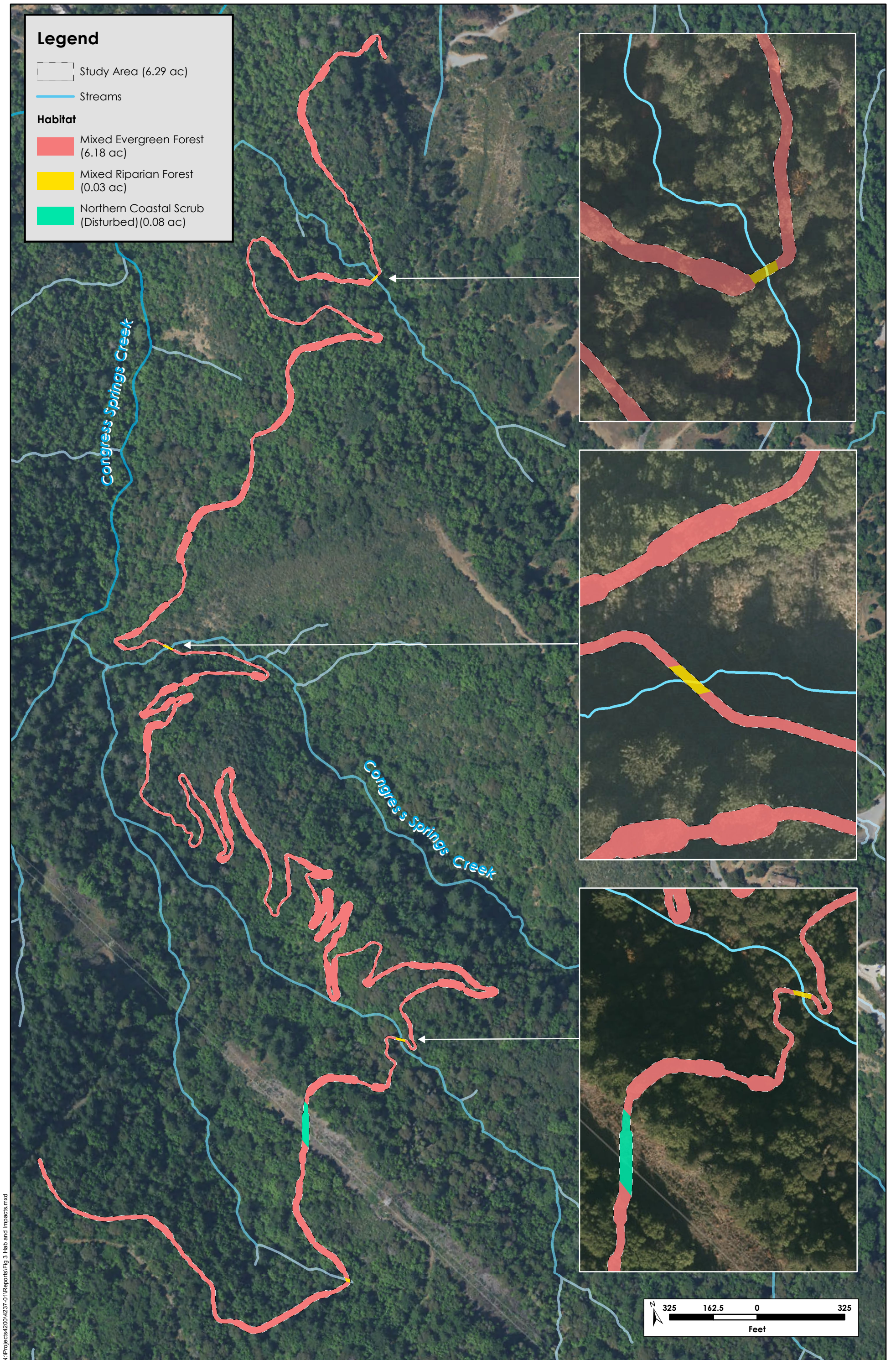
Elevations in the study area range from 845 ft near Quarry Park to over 1,630 ft along the ridge top. Two soils types are present within the study area: (1) Katytat-Mouser-Sanikara complex, 30 to 50 percent slopes, and (2) Sanikara-Mouser-Rock outcrop complex, 50 to 75 percent slopes (NRCS 2019).

4.2 Biotic Habitats

Reconnaissance-level surveys identified three habitat types in the study area: mixed evergreen forest (6.18 ac), northern coastal scrub (disturbed) (0.08 ac), and mixed riparian forest (0.03 ac) (Figure 3). These habitats are described in detail below. Plant species observed during the reconnaissance survey are listed in Appendix A.

4.2.1 Mixed Evergreen Forest

Vegetation. Mixed evergreen forest (Photo 1) is the dominant vegetation type throughout the study area. The canopy layer consists of abundant California bay (*Umbellularia californica*), with a significant, although less dominant, component of Douglas fir (*Pseudotsuga menziesii*) individuals. Generally, the higher elevation forest within the study area contains a higher component of Douglas fir, while in middle elevations the canopy mostly consists of California bay. Some coast live oak (*Quercus agrifolia*) is also present within the canopy, however its extent is fairly limited and it is most prevalent in the lower elevation portions of the study area. Owing to the dense canopy, understory development within this habitat is generally minimal and consists of sparse California blackberry (*Rubus ursinus*), California wood fern (*Dryopteris arguta*), and California rose (*Rosa californica*).



N:\Projects\4200\4237-01\Reports\Fig 3 Hab and Impacts.mxd



Figure 3. Habitats and Impacts Map

Wildlife. Mixed evergreen forests produce mast crops that are an important food source for many birds and mammals. Birds such as the Pacific-slope flycatcher (*Empidonax difficilis*), Steller's jay (*Cyanocitta stelleri*), dark-eyed junco (*Junco hyemalis*), acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Dryobates nuttallii*), hairy woodpecker (*Dryobates villosus*), chestnut-backed chickadee (*Poecile rufescens*), and Bewick's wren (*Thryomanes bewickii*) are year-round residents in evergreen forest habitat. Many additional species of birds, including the Allen's hummingbird (*Selasphorus sasin*), Cassin's vireo (*Vireo cassinii*), northern saw-whet owl (*Aegolius acadicus*), and western screech-owl (*Megascops kennicottii*), may nest here. The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), a California species of special concern, are common in the thick understory of oak-dominated forests, and deer mice (*Peromyscus maniculatus*), California mice (*Peromyscus californicus*), mule deer (*Odocoileus hemionus*), native western gray squirrels (*Sciurus griseus*), and nonnative fox squirrels (*Sciurus niger*) will also occur there. Bats, including the California myotis (*Myotis californicus*) and long-eared myotis (*Myotis evotis*), may roost and forage in this closed-canopy forest. Reptiles found in adjacent coastal scrub and mixed woodland habitats will occur regularly in this habitat, and common amphibians including the California slender salamander (*Batrachoseps attenuatus*) and California newt (*Taricha torosa*) occur here as well.



Photo 1. Mixed evergreen forest.

4.2.2 Northern Coastal Scrub (Disturbed)

Vegetation. The vegetation in this habitat type is regularly mowed and maintained by Pacific Gas & Electric (PG&E) in order to prevent interference and reduce fire risk from the overhanging high voltage transmission lines. Thus, the vegetation here is dominated by shrub species that do not grow tall enough to reach the transmission lines' exclusion envelope (Photo 2). These shrub species are



Photo 2. Transmission line corridor looking down-canyon toward State Route 9.

predominately black sage (*Salvia mellifera*), yerba santa (*Eriodictyon californicum*), and coyote brush (*Baccharis pilularis*). Low growing herbaceous vegetation occurs in the interstitial areas between mature shrubs, and is dominated by the native bunchgrass blue wildrye (*Elymus glaucus*) and the non-native forb Italian thistle (*Carduus pycnocephalus*).

Wildlife. The transmission line corridor does not provide especially good habitat for wildlife, as it is a relatively narrow corridor dominated by chaparral species. However, most species associated with the mixed evergreen forest will also use the edge of this land use type. Steller's jays, California scrub-jays (*Aphelocoma californica*), dark-eyed juncos, and Bewick's wrens are all expected to forage in the transmission line corridor. Raptors such as the American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperi*), and sharp-shinned hawk (*Accipiter striatus*) are also likely to forage in the open habitat of the transmission line. Common reptiles, such as the western fence lizard (*Sceloporus occidentalis*) and gopher snake (*Pituophis catenifer*), may also occur here.

4.2.3 Mixed Riparian Forest

Vegetation. Within the study area, mixed riparian forest occurs at each of the four proposed stream crossings (Photo 3). The vegetation composition of this habitat type is similar to the adjoining mixed evergreen forest and is similar at all four crossings, mainly varying in width and understory vegetation development. Large California bay individuals grow within the banks of the streams and overhang the stream itself, contributing allochthonous input to the channel (e.g., leaves that fall or are washed into the water and branches and trees that topple into the stream). Understory vegetation is more dense and abundant than in the mixed evergreen forest, although the composition is very similar and is dominated by California blackberry, California wood fern, and California rose.

The most western and highest elevation stream in the study area is a small unnamed ephemeral tributary that has no connection to groundwater and likely only flows during and immediately following moderate to substantial rain events. This stream has short and narrow banks, owing to its low flows. Moving downhill and eastward, the next stream encountered is an unnamed intermittent stream which likely has a seasonal connection to groundwater and runs throughout the winter in most years. This stream has substantial banks, and the channel at its deepest has approximately 10 ft of relief from streambed to top of bank. The next stream eastward is Congress Springs Creek, the most substantial

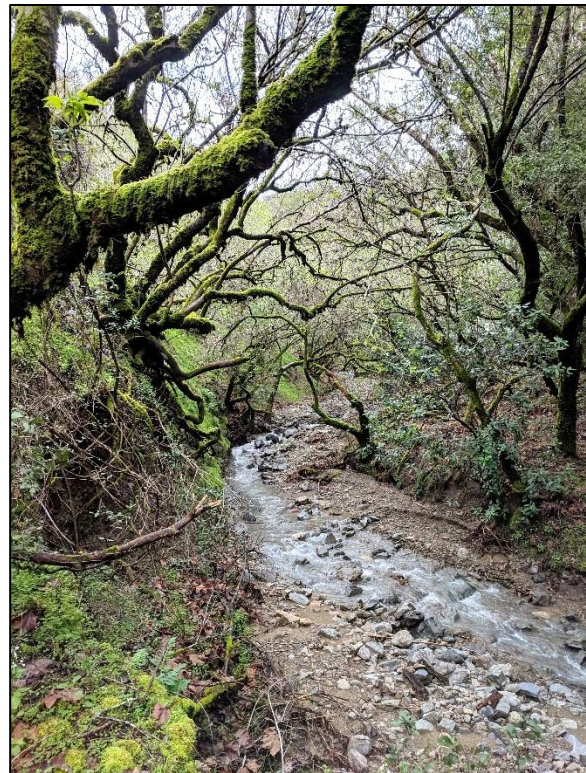


Photo 3. Mixed riparian forest along Congress Springs Creek.

stream in the study area. Congress Springs Creek flows through a fairly wide alluvial terrace, carrying substantial flows down to its intersection with Saratoga Creek. Congress Springs Creek likely flows throughout the winter, and may flow into summer following particularly wet winters. The last creek, at the lowest elevation and in the eastern portion of the study area, is an unnamed intermittent creek similar to the intermittent creek described above. While this creek flows consistently during the winter, it likely dries quickly following the end of the rainy season.

Wildlife. Riparian habitats in California generally support exceptionally rich animal communities and contribute disproportionately to landscape-level species diversity. The presence of seasonal or year-round water and abundant invertebrate fauna provide foraging opportunities and the diverse habitat structure provides cover and breeding opportunities for many species. The riparian forest in the study area is of moderate quality and provides cover and foraging habitat for a wide variety of terrestrial vertebrates (e.g., amphibians, reptiles, and mammals), as well as several functional groups of birds including insectivores (e.g., warblers, flycatchers), seed-eaters (e.g., finches), and raptors. Cavity-nesters (e.g., swallows and woodpeckers) are also expected to nest in this habitat due to the presence of large, mature trees with cavities.

Several species of amphibians and reptiles likely occur in the riparian habitat in the study area. Leaf litter, downed tree branches, low-growing forbs, and fallen logs provide cover for the California slender salamander, arboreal salamander (*Aneides lugubris*), ensatina (*Ensatina eschscholtzii*), California newt, western toad (*Anaxyrus boreas*), and Pacific treefrog (*Hyla regilla*). Reptile species found in this habitat include the western fence lizard, western skink (*Plestiodon skiltonianus*), southern alligator lizard (*Elgaria multicarinata*), ringneck snake (*Diadophis punctatus*), and common kingsnake (*Lampropeltis getula*). The occasional western pond turtle (*Actinemys marmorata*), a native species and California species of special concern, may also occur here, especially in Congress Springs Creek.

Among the species of birds that use the riparian forest habitat within the study area for breeding are the Pacific-slope flycatcher, warbling vireo (*Vireo gilvus*), California scrub-jay, and bushtit (*Psaltirparus minimus*). Limited nesting habitat for smaller raptors, such as the Cooper's hawk and red-shouldered hawk (*Buteo lineatus*), occurs in some of the larger trees here; however, no existing nests of raptors were observed in this habitat during the site visit. Black phoebes (*Sayornis nigricans*) may forage within this habitat, and may also nest. Green herons (*Butorides virescens*) and belted kingfishers (*Ceryle alcyon*) forage in these waters, and insectivorous birds forage aerially on insects over rivers and streams.

Small mammals, such as the ornate shrew (*Sorex ornatus*), broad-footed mole (*Scapanus latimanus*), native western gray squirrel, and nonnative fox squirrel may use the riparian forest for breeding and foraging. No nests of the San Francisco dusky-footed woodrat were observed in this habitat during reconnaissance-level surveys, although woodrats inhabiting adjacent habitats likely forage here. Medium-sized mammals such as the raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), and nonnative opossum (*Didelphis virginiana*) are also present in this habitat. Mule deer are common in the surrounding habitats and use riparian areas for access to water and foraging. Several species of bats, including

the Yuma bat (*Myotis yumanensis*) and Mexican free-tailed bat (*Tadarida brasiliensis*), forage over the riparian habitats.

Congress Springs Creek provides habitat for native fish species such as the hardhead (*Mylopharodon conocephalus*), Sacramento sucker (*Catostomus occidentalis*), river sculpin (*Cottus gulosus*), and California roach (*Lavinia symmetricus*) (PISCES 2019). The tributaries to Congress Springs Creek, as described above, are unlikely to provide habitat for fish species, except during the rainy season, when smaller individuals may disperse upstream.

Section 5. Special-Status Species and Sensitive Habitats

CEQA requires assessment of the effects of a project on species that are protected by state, federal, or local governments as “threatened, rare, or endangered”; such species are typically described as “special-status species”. For the purpose of the environmental review of the project, special-status species have been defined as described below. Impacts on these species are regulated by some of the federal, state, and local laws and ordinances described in Section 3.0 above.

For purposes of this analysis, “special-status” plants are considered plant species that are:

- Listed under FESA as threatened, endangered, proposed threatened, proposed endangered, or a candidate species.
- Listed under CESA as threatened, endangered, rare, or a candidate species.
- Listed by the CNPS as CRPR 1A, 1B, 2, 3, or 4.

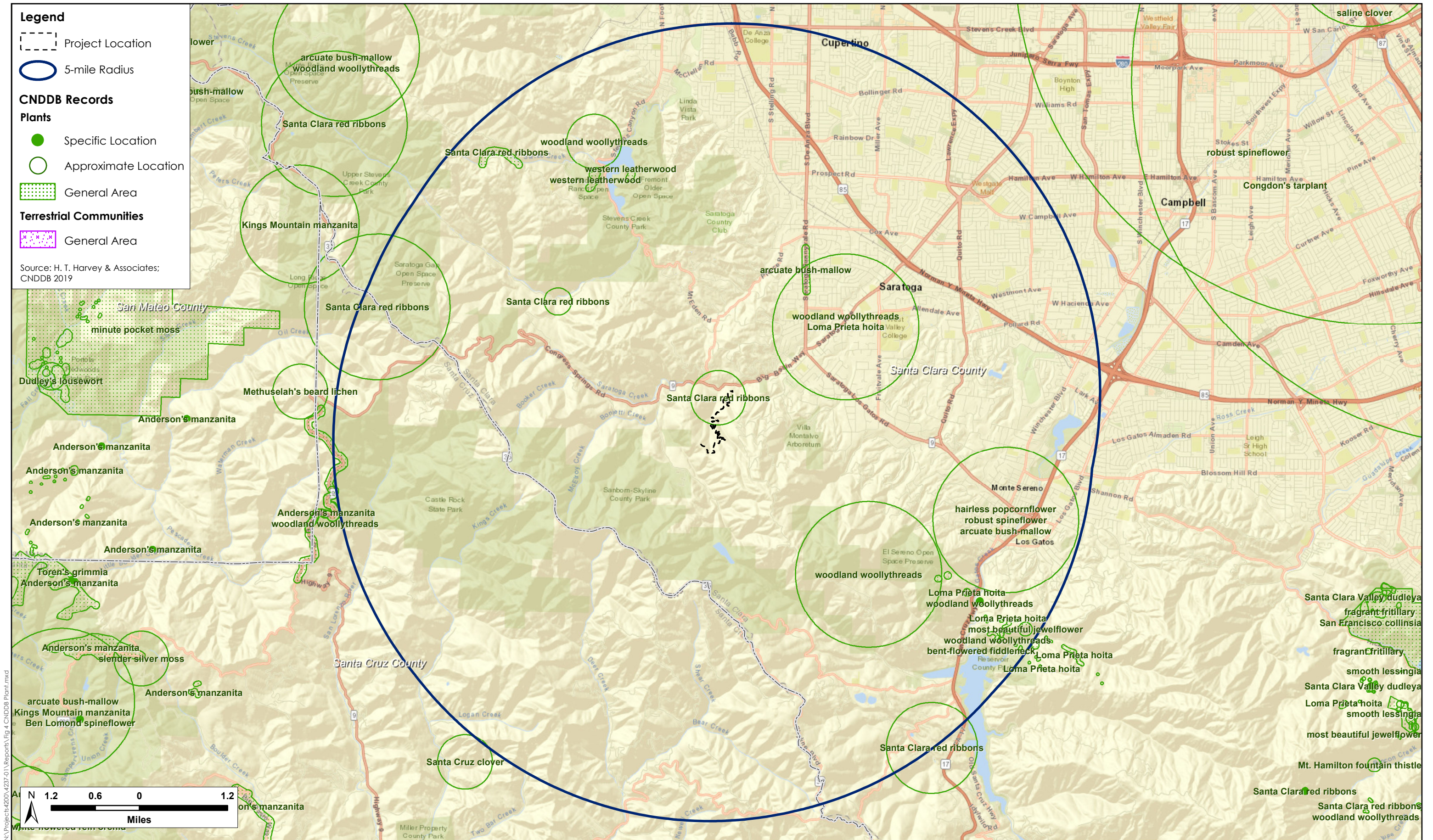
For purposes of this analysis, “special-status” animals are considered animal species that are:

- Listed under FESA as threatened, endangered, proposed threatened, proposed endangered, or a candidate species.
- Listed under CESA as threatened, endangered, or a candidate threatened or endangered species.
- Designated by the CDFW as a California species of special concern.
- Listed in the California Fish and Game Code as fully protected species (fully protected birds are provided in Section 3511, mammals in Section 4700, reptiles and amphibians in Section 5050, and fish in Section 5515).

Information concerning threatened, endangered, and other special-status species that potentially occur in the study area was collected from several sources and reviewed by H. T. Harvey & Associates biologists as described in Section 2.1 above. Figure 4 depicts CNDDB records of special-status plant species in the general vicinity of the study area and Figure 5 depicts CNDDB records of special-status animal species. These generalized maps show areas where special-status species are known to occur or have occurred historically.

5.1 Special-Status Plant Species

The CNPS (2019) and CNDDB (2019) identify 86 special-status plant species as potentially occurring in at least one of the nine USGS quadrangles containing or surrounding the study area for CRPR 1 or 2 species, or in Santa Clara County for CRPR 3 and 4 species. Eighty-one of those potentially occurring special-status plant species were determined to be absent from the study area for at least one of the following reasons: (1) lack of suitable habitat types; (2) absence of specific microhabitat or edaphic requirements, such as serpentine soils; (3) the elevation range of the species is outside of the range on the study area; and/or (4) the species is considered



NA:Projects\4237-01\Reports\Fig 4 CNDDb Plant.mxd

extirpated. Appendix B lists these plants along with the basis for the determination of absence. Suitable habitat, edaphic requirements, and an appropriate elevation range were determined to be present in the study area for five plant species: Santa Clara red ribbons (*Clarkia concinna* ssp. *automixa*), bent-flowered fiddleneck (*Amsinckia lunaris*), Loma Prieta hoita (*Hoita strobilina*), woodland woollythreads (*Monolopia gracilens*), and white-flowered rein orchid (*Piperia candida*). These species are discussed in detail below.

Santa Clara red ribbons (*Clarkia concinna* ssp. *automixa*). Federal Listing Status: None; State Listing Status: None; CNPS List: 4.3. Santa Clara red ribbons is an annual herb in the evening-primrose family (Onagraceae) that blooms from May to June, and rarely as early as April or as late as July, depending on the microsite and annual climatic conditions. This species occurs in chaparral and cismontane woodland habitats in San Francisco Bay Area foothills at an elevational range of approximately 295 to 4,950 ft. and is endemic to Alameda and Santa Clara Counties (CNPS 2019), although older records exist from Santa Cruz County. A historical CNDDDB occurrence, #16, is mapped within the study area and its herbarium label attributes its location to “Congress Springs”. Numerous other historical occurrences are located within the project vicinity on the east side of the Santa Cruz Mountains, and include CNDDDB Occurrence #15, #18, and #17. The mixed riparian forest, northern coastal scrub, and openings in mixed evergreen forest habitats in the study area provide potential habitat for Santa Clara red ribbons.

Bent-flowered fiddleneck (*Amsinckia lunaris*). Federal Listing Status: None; State Listing Status: None; CNPS List: 1B.2. Bent-flowered fiddleneck is an annual herb in the borage family (Boraginaceae) that blooms from March to June. It inhabits cismontane woodland, coastal bluff scrub, and valley and foothill grassland habitat at elevations from 10 to 1,640 ft. Bent-flowered fiddleneck occurs or has been known to occur in Alameda, Contra Costa, Colusa, Lake, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Mateo, Sonoma, and Yolo Counties. It is known from 86 occurrences in the North and Central Coast Ranges (CNPS 2019). In the study area, grassy openings in mixed evergreen forest between Quarry Park and the most eastward stream crossing provides suitable habitat for bent-flowered fiddleneck.

Loma Prieta hoita (*Hoita strobilina*). Federal Listing Status: None; State Listing Status: None; CNPS List: 1B.1. Loma Prieta hoita is a perennial herb in the legume family (Fabaceae) that blooms from May to October. It typically grows in mesic areas with serpentinite features in chaparral, cismontane woodlands, and riparian woodlands at elevations between 98 and 2,822 ft. It occurs in 11 USGS quadrangles in Contra Costa, Santa Clara, and Santa Cruz Counties, and is believed extirpated from Alameda County. There are 33 presumed extant populations within these areas (CNPS 2019). CNDDDB Occurrence #19 occurs approximately 4 mi to the south of the study area. Soil types within the study area are similar to soils underlying other populations of Loma Prieta hoita on the eastern side of the Santa Cruz Mountains, and include the Katykak-Mouser-Sanikara complex, Mouser-Katykat-Sanikara complex, and Sanikara-Mouser-Rock outcrop complex. In the study area, mixed riparian forest and mesic areas of mixed evergreen forest provide suitable habitat for Loma Prieta hoita.

Woodland woollythreads (*Monolopia gracilens*). Federal Listing Status: None; State Listing Status: None; CNPS List: 1B.2. Woodland woollythreads is an annual herb in the composite family (Asteraceae) and

blooms from March through July, although in some scenarios the bloom may begin in February (CNPS 2019). The species occurs in broadleaved upland forest openings, chaparral openings, cismontane woodland, North Coast coniferous forest openings, and valley and foothill grassland at elevations from 328 through 3,936 ft. Woodland woollythreads is a serpentine indicator (Safford 2005) and is often, though not always, found on serpentine soils. The range of the species includes Alameda, Contra Costa, Monterey, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, and San Mateo Counties. In the study area, the northern coastal scrub, as well as the mixed evergreen forest between Quarry Park and the most eastward stream crossing provides suitable habitat for woodland woollythreads.

White-flowered rein orchid (*Piperia candida*). Federal Listing Status: None; State Listing Status: None; CNPS List: 1B.2. White-flowered rein orchid is a perennial herb in the orchid family (Orchidaceae) that blooms from May through September. This species occurs in broadleaved upland forests, lower montane coniferous forests, and North Coast coniferous forests at an elevation range of approximately 99 to 4,325 ft. This species is sometimes found on serpentinite substrates, although it is not a strict edaphic requirement (Safford 2005). White-flowered rein orchid is known from 46 USGS 7.5-minute quadrangles in Del Norte, Humboldt, Mendocino, Santa Clara, Santa Cruz, Siskiyou, San Mateo, Sonoma, and Trinity Counties, as well as in Oregon and possibly Washington states. This species may flower infrequently in some locations, and identification from herbarium materials is very difficult, two factors that make a rarity rating difficult to determine (CNPS 2019). In the study area, mixed evergreen forest and mixed riparian forest provide suitable habitat for white-flowered rein orchid.

5.2 Special-Status Animal Species

The legal status and likelihood of occurrence in the study area of special-status animal species known to occur, or potentially occurring, in the project region are presented in Table 1. Most of the special-status species listed in Table 1 are not expected to occur in the study area because it lacks suitable habitat, is outside the known range of the species, and/or is isolated from the nearest known extant populations by development or otherwise unsuitable habitat. Animal species not expected to occur in the study area for these reasons include the Bay checkerspot butterfly (*Euphydryas editha bayensis*), green sturgeon (*Acipenser medirostris*), Central California coast steelhead (*Oncorhynchus mykiss*), foothill yellow-legged frog (*Rana boylei*), California tiger salamander (*Ambystoma californiense*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), California Ridgway's rail (*Rallus obsoletus obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*), western snowy plover (*Charadrius alexandrinus nivosus*), California least tern (*Sterna antillarum browni*), long-eared owl (*Asio otus*), burrowing owl (*Athene cunicularia*), tricolored blackbird (*Agelaius tricolor*), yellow warbler (*Setophaga petechia*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), loggerhead shrike (*Lanius ludovicianus*), white-tailed kite (*Elanus leucurus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), salt marsh wandering shrew (*Sorex vagrans halicoetes*), and American badger (*Taxidea taxus*).

The Vaux's swift (*Chaetura vauxi*), is considered California species of special concern and may occur in the study area as a nonbreeding transient, forager, or migrant but is not expected to breed here. Because this species is

only considered a species of special concern when nesting, it is not a “special-status species” when it occurs as a nonbreeding visitors to the study area, and is not discussed further in this document.

The western red bat (*Lasiurus blossevillei*) is considered a species of special concern year-round and may occasionally occur in the study area as a nonbreeding migrant but it is not known or expected to breed, to occur regularly, or to occur in large numbers in the study area. The Townsend’s big-eared bat (*Corynorhinus townsendii*), a California species of special concern, is not expected to breed in the study or to occur regularly or in large numbers due to a lack of suitable roosting habitat.

Seven special-status animal species, the California red-legged frog, California giant salamander (*Dicamptodon ensatus*), Santa Cruz black salamander (*Aneides flavipunctatus niger*), western pond turtle, olive-sided flycatcher (*Contopus cooperi*), pallid bat (*Antrozous pallidus*), and San Francisco dusky-footed woodrat have the potential to occur, or are known to occur, in the study area. Expanded descriptions for each of these species are provided in Appendix C.

5.3 Sensitive Natural Communities, Habitats, and Vegetation Alliances

Natural communities have been considered part of the Natural Heritage Conservation triad, along with plants and animals of conservation significance, since the state inception of the Natural Heritage Program in 1979. The CDFW determines the level of rarity and imperilment of vegetation types, and tracks sensitive communities in its Rarefind database (CNDDDB 2019). Global rankings (G) of natural communities reflect the overall condition (rarity and endangerment) of a habitat throughout its range, whereas state (S) rankings reflect the condition of a habitat within Natural communities are defined using NatureServe’s standard heritage program methodology as follows (Faber-Langendoen et al. 2012):

- G1/S1: Critically imperiled
- G2/S2: Imperiled
- G3/S3: Vulnerable.
- G4/S4: Apparently secure
- G5/S4: Secure

In addition to tracking sensitive natural communities, the CDFW also ranks vegetation alliances, defined by repeating patterns of plants across a landscape that reflect climate, soil, water, disturbance, and other environmental factors (Sawyer et al. 2009). If an alliance is marked G1-G3, all of the vegetation associations within it will also be of high priority (CDFW 2019). The CDFW provides the Vegetation Classification and Mapping Program’s (VegCAMP) currently accepted list of vegetation alliances and associations (CDFW 2019).

Table 1. Special-Status Animal Species, Their Status, and Potential Occurrence in the Study Area

Name	*Status	Habitat	Potential for Occurrence in the Study Area
Federal or State Endangered, Rare, or Threatened Species			
Bay checkerspot butterfly (<i>Euphydryas editha bayensis</i>)	FT	Native grasslands on serpentine soils. Larval host plants are <i>Plantago erecta</i> and/or <i>Castilleja</i> sp.	Absent. Serpentine soils and the associated host plants do not occur in the study area. Determined to be absent.
Green sturgeon (<i>Acipenser medirostris</i>)	FT, CSSC	Spawns in large river systems such as the Sacramento River; forages in nearshore oceanic waters, bays, and estuaries.	Absent. The streams within the study area are tributary to Saratoga Creek and there is an impassable barrier to upstream movement of anadromous fish at the confluence of Saratoga Creek and San Tomas Aquino Creek (Leidy et al. 2005), well downstream of the study area. This species is not known to occur in South Bay streams. Determined to be absent.
Central California Coast steelhead (<i>Oncorhynchus mykiss</i>)	FT	Cool streams with suitable spawning habitat and conditions allowing migration between spawning and marine habitats.	Absent. The streams within the study area are tributary to Saratoga Creek. Saratoga Creek is known to have had a historical steelhead run (Leidy et al. 2005). Although potentially suitable aquatic habitat may be present in the study area, there is an impassable barrier to upstream movement of anadromous fish at the confluence of Saratoga Creek and San Tomas Aquino Creek (Leidy et al. 2005), well downstream of the study area. Determined to be absent.
California tiger salamander (<i>Ambystoma californiense</i>)	FT, ST	Vernal or temporary pools in annual grasslands or open woodlands.	Absent. No suitable habitat is present in the study area. Further, populations have been extirpated from portions of Santa Clara County due to habitat loss, and the species is now considered absent from the project vicinity, including the study area. The closest occurrence in the project vicinity is adjacent to the southern edge of Rancho San Antonio Open Space Preserve, which is approximately 4.3 mi north of the study area (CNDDDB 2019). Determined to be absent.

Name	*Status	Habitat	Potential for Occurrence in the Study Area
San Francisco garter snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE, SE	Prefer densely vegetated freshwater habitats. May use upland burrows for aestivation.	Absent. The project is outside of the known range of the species. Determined to be absent.
California red-legged frog (<i>Rana draytonii</i>)	FT, CSSC	Streams, freshwater pools, and ponds with emergent or overhanging vegetation.	Absent as Breeder. Congress Springs Creek and its drainages are relatively high gradient streams and emergent and low overhanging vegetation is generally absent. Thus, red-legged frogs are not expected to breed in the study area. Nevertheless, there is a recent record from Saratoga Creek, approximately 0.3 mi from the study area (CNDDDB 2019), and potentially suitable breeding habitat has been identified in Quarry Park at the northern end of the project alignment (i.e., within dispersal distance) (City of Saratoga 2014). Thus, because the streams and riparian habitat in the study area provide ostensibly suitable foraging and dispersal habitat, non-breeding individuals may occur in the study area.
California Ridgway's rail (<i>Rallus obsoletus obsoletus</i>)	FE, SE, SP	Salt marshes characterized by large extents of saltmarsh cordgrass (<i>Spartina</i> spp.) or pickleweed (<i>Salicornia</i> spp.), with well-developed tidal channels.	Absent. Salt marsh habitat is not present on or adjacent to the study area. Determined to be absent.
California black rail (<i>Laterallus jamaicensis coturniculus</i>)	ST, SP	Breeds in fresh, brackish, and tidal salt marsh.	Absent. Salt marsh habitat is not present on or adjacent to the study area. Determined to be absent.
Western snowy plover (<i>Charadrius alexandrinus nivosus</i>)	FT, CSSC	Sandy beaches on marine and estuarine shores and salt pans in Bay saline managed ponds.	Absent. Suitable habitat for the western snowy plover is not present on or adjacent to the study area. Determined to be absent.
California least tern (<i>Sterna antillarum browni</i>)	FE, SE, SP	Nests along the coast on bare or sparsely vegetated, flat substrates. In the South Bay, nests in salt pans and on an old airport runway. Forages for fish in open waters.	Absent. Suitable habitat for the California least tern is not present on or adjacent to the study area. Determined to be absent.

Name	*Status	Habitat	Potential for Occurrence in the Study Area
Tricolored blackbird (<i>Agelaius tricolor</i>)	ST	Nests near fresh water in dense emergent vegetation.	Absent. Suitable aquatic habitat with dense emergent vegetation is not present in the study area. Determined to be absent.
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	FE, SE, SP	Salt marsh habitat dominated by common pickleweed or alkali bulrush.	Absent. Salt marsh habitat is not present on or adjacent to the study area. Determined to be absent.
Foothill yellow-legged frog (<i>Rana boylei</i>)	CSSC, SC	Partially shaded shallow streams and riffles with a rocky substrate. Occurs in a variety of habitats in coast ranges.	Absent. Ostensibly suitable habitat for the foothill yellow-legged frog is present in the study area, and there are several historical records of this species from the Saratoga Creek corridor, immediately adjacent to the study area (CNDDDB 2019). However, there are no recent records of this species from the project vicinity (CNDDDB 2019), and it is considered extirpated from the project vicinity. Determined to be absent.
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	FE, SE, SP	Salt marsh habitat dominated by common pickleweed or alkali bulrush.	Absent. Salt marsh habitat is not present on or adjacent to the study area. Determined to be absent.
California Species of Special Concern			
California giant salamander (<i>Dicamptodon ensatus</i>)	CSSC	Moist forests and riparian zones in or near clear, cold streams or seeps.	May be Present. This species is found in the Santa Cruz Mountains and foothills, typically in moist forests and riparian zones in or near streams or seeps, such as those present throughout the study area. There are numerous records, historical and recent, in the project vicinity (CNDDDB 2019).
Santa Cruz black salamander (<i>Aneides flavipunctatus niger</i>)	CSSC	Moist forests and riparian zones in or near clear, cold streams or seeps.	Present. This species is found in the Santa Cruz Mountains and foothills, typically in moist forests and riparian zones in or near streams or seeps, such as those present throughout the study area. There are numerous records, both historical and recent, in the project vicinity, including a historical record from Congress Springs Canyon within the study area (CNDDDB 2019).

Name	*Status	Habitat	Potential for Occurrence in the Study Area
Western pond turtle (<i>Actinemys marmorata</i>)	CSSC	Permanent or nearly permanent water in a variety of habitats.	Absent as Breeder. Streams within the study area provide only marginal quality habitat due to the paucity of open water and basking sites. Therefore, the species is not expected to use the study area for nesting. However, small numbers of western pond turtles may use the study area (especially Congress Springs Creek) for dispersal.
Burrowing owl (<i>Athene cunicularia</i>)	CSSC	Open grasslands and ruderal habitats with suitable burrows, usually those made by California ground squirrels (<i>Otospermophilus beecheyi</i>).	Absent. The absence of extensive grasslands on or near the study area precludes this species presence. The closest known records are of wintering birds at the Oka Ponds in Campbell, on the valley floor, 5 mi from the study area, and at the Russian Ridge Open Space Preserve, 9.5 mi from the study area (CNDDDB 2019; Cornell Lab of Ornithology 2019). Determined to be absent.
Long-eared owl (<i>Asio otus</i>)	CSSC (nesting)	Riparian bottomlands with tall, dense willows (<i>Salix</i> spp.) and cottonwood (<i>Populus fremontii</i>) stands. In the Santa Cruz Mountains, also occurs in dense live oak and California Bay woodlands along upland streams; forages primarily in adjacent open areas.	Absent. The long-eared owl is uncommon in the Santa Cruz Mountains in appropriate habitat, but it is relatively rare and very secretive (CNNDDB 2019; Cornell Lab of Ornithology 2019). The closest records to the study area are 6.1 mi north-northwest in the Monte Bello Open Space Preserve. Grasslands required by this species as foraging habitat are not present in the study area or adjacent areas. Determined to be absent.

Name	*Status	Habitat	Potential for Occurrence in the Study Area
Vaux's swift (<i>Chaetura vauxi</i>)	CSSC (nesting)	Nests in snags in coastal coniferous forests or, occasionally, in chimneys; forages aerially.	Absent as Breeder. In western Santa Clara County, known to nest in chimneys and may nest in snags in coniferous forest (Rottenborn 2007). Snags in mixed woodland habitat in the study area provide ostensible nesting habitat for this species, but Vaux's swifts are not known to nest in mixed woodlands in Santa Clara County. May forage aerially over the site. Because this species is only considered special-status when nesting, individuals would not be considered special-status when they occur on the site as a migrant.
Yellow warbler (<i>Setophaga petechia</i>)	CSSC (nesting)	Nests in dense stands of willow and other riparian habitat.	Absent. Although riparian woodlands are present in the study area, they are composed primarily of California bay trees. Dense stands of cottonwood and willow trees, which this species typically uses as nesting and foraging habitat, are absent from the study area. Determined to be absent.
Olive-sided flycatcher (<i>Contopus cooperi</i>)	CSSC (nesting)	Breeds in mature forests with open canopies, along forest edges in more densely vegetated areas, in recently burned forest habitats, and in selectively harvested landscapes	May be Present. The riparian and mixed evergreen habitats in the study area provide suitable nesting habitat for this species. The species is known to nest in similar habitats in the vicinity (Bousman 2007) and is often detected in nearby parks during the nesting season (Cornell Lab of Ornithology 2019).
Loggerhead shrike (<i>Lanius ludovicianus</i>)	CSSC (nesting)	Nests in tall shrubs and dense trees; forages in grasslands, marshes, and ruderal habitats.	Absent. Open habitats in the study area are too restricted and too isolated from vast expanses of open habitat elsewhere to support this species.
Salt marsh wandering shrew (<i>Sorex vagrans halicoetes</i>)	CSSC	Medium to high marsh 6 to 8 ft above sea level with abundant driftwood and common pickleweed.	Absent. Salt marsh habitat is not present on or adjacent to the study area. Determined to be absent.

Name	*Status	Habitat	Potential for Occurrence in the Study Area
San Francisco dusky-footed woodrat (<i>Neotoma fuscipes annectens</i>)	CSSC	Woodlands and scrub habitats throughout the Santa Cruz Mountains and portions of the South Bay.	Present. This species is known to occur in the study area, with high densities of nests occurring in certain regions along the proposed trail alignment.
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	CSSC	Roosts in caves and mine tunnels, and occasionally in deep crevices in trees such as redwoods or in abandoned buildings, in a variety of habitats.	Absent as Breeder. Suitably large cavities to support roosting are not present in the study area. However, the species may be present as an occasional migrant or forager. The closest known location to the study area is from Picchetti Ranch Open Space Preserve, approximately 3.5 mi north of study area (CNDDB 2019).
Pallid bat (<i>Antrozous pallidus</i>)	CSSC	Forages over many habitats; roosts in caves, rock outcrops, buildings, and hollow trees.	May be Present. Small to medium-sized cavities in trees within and adjacent to the study area provide moderately suitable roosting habitat.
Western red bat (<i>Lasiurus blossevillii</i>)	CSSC	Roosts in foliage in forest or woodlands, especially in or near riparian habitat.	Absent as Breeder. May occur in low numbers as a migrant and winter resident, but does not breed in the project vicinity. May roost in foliage in trees in the study area, primarily in riparian areas.
American badger (<i>Taxidea taxus</i>)	CSSC	Burrows in grasslands and occasionally in infrequently disked agricultural areas.	Absent. No suitable habitat is present in the study area, and badgers are not known to occur in the region due to the lack of extensive grasslands and agricultural areas with friable soils, which are needed for digging burrows. Determined to be absent.
California Fully Protected Species			
Golden eagle (<i>Aquila chrysaetos</i>)	FP	Breeds on cliffs or in large trees (rarely on electrical towers), forages in open areas.	Absent. No suitable nesting or foraging habitat is present in the study area. Determined to be absent.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	SE, SP	Occurs mainly along seacoasts, rivers, and lakes; nests in tall trees or in cliffs, occasionally on electrical towers. Feeds mostly on fish.	Absent. No suitable nesting or foraging habitat is present in the study area. Determined to be absent.

Name	*Status	Habitat	Potential for Occurrence in the Study Area
White-tailed kite (<i>Elanus leucurus</i>)	SP	Nests in trees and forages in extensive grasslands or marshes.	Absent. Open habitats in the study area are too restricted and too isolated from vast expanses of open habitat elsewhere to support this species (even for foraging by migrants). Determined to be absent.

SPECIAL-STATUS SPECIES CODE DESIGNATIONS

FE = Federally listed Endangered
 FT = Federally listed Threatened
 SE = State listed Endangered
 ST = State listed Threatened
 SC = State Candidate for listing
 CSSC = California Species of Special Concern
 SP = State Fully Protected Species

Impacts on CDFW sensitive natural communities, vegetation alliances/associations, or any such community identified in local or regional plans, policies, and regulations, must be considered and evaluated under CEQA (Title 14, Division 6, Chapter 3, Appendix G of the California Code of Regulations). Furthermore, aquatic, wetland and riparian habitats are also protected under applicable federal, state, or local regulations, and are generally subject to regulation, protection, or consideration by the USACE, RWQCB, CDFW, and/or the USFWS.

Sensitive Natural Communities. A query of sensitive habitats in Rarefind (CNDDDB 2019) identified nine sensitive habitats as occurring within the nine USGS quadrangles containing or surrounding the study area: maritime coast range ponderosa pine forest (G1/S1.1), Monterey pine forest (G1/S1.1), north central coast California roach/stickleback/steelhead stream (unranked), north central coast drainage Sacramento sucker/roach river (unranked), north central coast short-run coho stream (unranked), north central coast steelhead/sculpin stream (unranked), northern coastal salt marsh (G3/S3/2), northern interior cypress forest (G2/S2/2), and northern maritime chaparral (G1/S1.2).

There were no ponderosa pine (*Pinus ponderosa*) or Monterey pine (*Pinus radiata*) trees observed during the site visit, therefore both maritime coast range ponderosa pine forest and Monterey pine forest are absent from the study area. The study area does not occur along the coast, but rather on the eastern side of the Santa Cruz Mountains. Therefore, all four types of sensitive rivers and streams described above are considered absent from the study area, as they are restricted to the western slope in the Santa Cruz Mountains. Northern coastal salt marsh is characterized by Holland (1986) as occurring along sheltered inland margins of bays, often co-dominated by pickleweed (*Salicornia* spp.), California cordgrass (*Spartina foliosa*), and sometimes saltgrass (*Distichlis spicata*). None of these species and no salt marsh habitats were observed in the study area. No cypress (*Hesperocyparis* sp.) trees were observed during the site visit, therefore northern interior cypress forest is absent from the study area. Northern maritime chaparral is described by Holland (1986) as occurring “within the zone of coastal fog influence... near the coast.” Additionally, this chaparral type is dominated by ceanothus (*Ceanothus* sp.) and manzanita (*Arctostaphylos* sp.). The study area is on the eastern side of the Santa Cruz Mountains, and is not subject to consistent fog influence, and the northern coastal scrub (disturbed) does not support the required shrub species assemblages. Therefore, northern maritime chaparral is absent from the study area.

Sensitive Vegetation Alliances. Nearly the entire study area, except the maintained transmission corridor, can best be described as California bay forest (*Umbellularia californica* association). As the alliance level, this habitat would likely be described as *Umbellularia California – Pseudotsuga menziesii* alliance due to the consistent occurrence of Douglas fir within the canopy. CDFW does not currently recognize this alliance and as such, it has not been ranked for rarity (CDFW 2019). However, the California bay forest association and alliance is ranked as G4/S3 by CDFW. This means there are greater than 100 viable occurrences worldwide and/or more than 12,950 hectares, and there are 21–100 viable occurrences statewide and/or more than 2,590–12,950 hectares. Thus any undescribed association under this alliance would be considered sensitive by CDFW. Therefore, all mixed evergreen forest and mixed riparian forest would qualify as a sensitive vegetation alliance (CDFW 2019).

Sensitive Habitats (Waters of the U.S./State). The four streams which cross the study area (shown in Figure 3) would all likely be considered waters of the U.S./state. Any impacts on verified waters of the U.S./state within the study area would require a Section 404 permit from the USACE and Section 401 Water Quality Certification from the San Francisco RWQCB.

Riparian. The riparian banks and the habitat they support would be considered jurisdictional by the CDFW and the RWQCB. Riparian habitat occurs along each of the four streams in the study area, and is shown on Figure 3 as the mixed riparian forest habitat type. Any impacts to this habitat would require a Section 401 Water Quality Certification/Waste Discharge Requirement from RWQCB and a LSAA agreement from CDFW.

Section 6. Impacts and Mitigation Measures

The State CEQA Guidelines provide direction for evaluating the impacts of projects on biological resources and determining which impacts will be significant. CEQA defines a “significant effect on the environment” as “a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” Under State CEQA Guidelines Section 15065, a project's impacts on biological resources are deemed significant if the project would:

- A. “substantially reduce the habitat of a fish or wildlife species”
- B. “cause a fish or wildlife population to drop below self-sustaining levels”
- C. “threaten to eliminate a plant or animal community”
- D. “reduce the number or restrict the range of a rare or endangered plant or animal”

In addition to the Section 15065 criteria that trigger mandatory findings of significance, Appendix G of State CEQA Guidelines provides a checklist of other potential impacts to consider when analyzing the significance of project effects. The impacts listed in Appendix G may or may not be significant, depending on the level of the impact. For biological resources, these impacts include whether the project would:

- A. “have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service”
- B. “have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service”
- C. “have a substantial adverse effect on state or federally protected wetlands”
- D. “interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites”
- E. “conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance”
- F. “conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan”

6.1 Impacts on Special-Status Species: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans,

policies, or regulations, or by the CDFW or USFWS (Less than Significant with Mitigation)

6.1.1 Impacts on CRPR 1 or 2 Plants (Less than Significant with Mitigation)

Four plant species, bent-flowered fiddleneck, Loma Prieta hoita, woodland woollythreads, and white-flowered rein orchid, categorized by the CNPS as CRPR 1 or 2 have the potential to occur within the study area. If present, project development may affect special-status plants due to disturbance of individuals within the populations and disturbance or destruction of suitable habitat. Direct impacts could include grading or filling areas supporting these species, trampling or crushing of plants, and soil compaction. Indirect impacts could include increased mobilization of dust onto plants, which can affect plant survival due to adverse effects on photosynthesis and respiration.

Conservation of CRPR 1 and 2 species is important because their populations contribute to preserving the genetic resources for the species and ensuring persistence of rare species in the County and state. If these species are present and impacts occur to 10% or less of their population (by individuals or occupied area) within the study area, such a low level of impact would not be expected to cause the extirpation of the population, as long as the remaining plants were avoided and protected. However, due to the regional rarity of these species, impacts to more than 10% of a population could contribute to a reduction in these species' range or genetic resources. Such an impact would be significant under CEQA (Criterion A) because extirpation of any population located within the study area could negatively impact the species' genetic resources. Implementation of the following mitigation measures would reduce impacts on special-status plants to a less-than-significant level.

Mitigation Measure 1. Pre-Activity Surveys for Special-Status Plants. Prior to initial ground disturbance and during the appropriate blooming period (i.e., bent-flowered fiddleneck, June – July; Loma Prieta hoita, June – July; woodland woollythreads, March – July; and white-flowered rein orchid, May - September), a focused survey for these four potentially occurring special-status plant species will be conducted within suitable habitat in the project footprint and a minimum 20-ft buffer around the project footprint. This buffer may be increased by the qualified plant ecologist depending on site-specific conditions and activities planned in the areas, but must be at least 20-ft wide. Situations for which a greater buffer may be required include proximity to proposed activities expected to generate large volumes of dust, such as grading; or potential for project activities to alter hydrology supporting the habitat for the species in question. Surveys are to be conducted in a year with near-average or above-average precipitation. The purpose of the survey will be to assess the presence or absence of the potentially occurring species. If none of the target species are found in the impact area or the identified buffer, then no further mitigation will be warranted. If bent-flowered fiddleneck, Loma Prieta hoita, woodland woollythreads, or white-flowered rein orchid individuals are found in the survey area, then Mitigation Measures 2 and 3 will be implemented.

Mitigation Measure 2. Avoidance Buffers. To the extent feasible, and in consultation with a qualified plant ecologist, the project proponent will design and construct the project to avoid completely impacts on

all populations of special-status plant species within the project site or within the identified buffer of the impact area. Avoided special-status plant populations will be protected by establishing and observing the identified buffer between plant populations and the impact area. All such populations located in the impact area or the identified buffer, and their associated designated avoidance areas, will be clearly depicted on any construction plans. In addition, prior to initial ground disturbance or vegetation removal, the limits of the identified buffer around special-status plants to be avoided will be flagged or fenced. The flagging will be maintained intact and in good condition throughout project-related construction activities.

If complete avoidance is not feasible and more than 10% of a population (by occupied area or individuals) would be impacted as determined by a qualified plant ecologist, Mitigation Measure 3 will be implemented.

Mitigation Measure 3. Preserve Off-Site Populations of Special-Status Plant Species. If avoidance of CRPR 1 or 2 special-status plant species is not feasible and more than 10% of the population would be impacted, compensatory mitigation will be provided via the preservation, enhancement, and management of occupied habitat for the species. To compensate for impacts on CRPR 1 or 2 special-status plants, off-site habitat occupied by the affected species will be preserved and managed in perpetuity at a minimum 1:1 mitigation ratio (at least one plant preserved for each plant affected, and at least one occupied acre preserved for each occupied acre affected), for any impact over the 10% significance threshold.

Areas proposed to be preserved as compensatory mitigation for special-status plant impacts must contain verified extant populations of the CRPR-ranked plants that would be impacted. Mitigation areas will be managed in perpetuity to encourage persistence and even expansion of the preserved target species. Mitigation lands cannot be located on land that is currently held publicly for resource protection unless substantial enhancement of habitat quality will be achieved by the mitigation activities. The mitigation habitat will be of equal or greater habitat quality compared to the impacted areas, as determined by a qualified plant ecologist, in terms of soil features, extent of disturbance, vegetation structure, and dominant species composition, and will contain or successfully re-establish at least as many individuals of the species as are impacted by project activities. The permanent protection and management of mitigation lands will be ensured through an appropriate mechanism, such as a conservation easement or fee title purchase. A habitat mitigation and monitoring plan (HMMP) will be developed and implemented for the mitigation lands. That plan will include, at a minimum, the following information:

- a summary of habitat impacts and the proposed mitigation;
- a description of the location and boundaries of the mitigation site and description of existing site conditions;
- a description of measures to be undertaken to enhance (e.g., through focused management that may include removal of invasive species in adjacent suitable but currently unoccupied habitat) the mitigation site for the focal special-status species;

- a description of measures to transplant individual plants or seeds from the impact area to the mitigation site, if appropriate (which will be determined by a qualified plant or restoration ecologist);
- proposed management activities to maintain high-quality habitat conditions for the focal species;
- a description of habitat and species monitoring measures on the mitigation site, including specific, objective final and performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc. At a minimum, performance criteria will include demonstration that any plant population fluctuations over the monitoring period do not indicate a downward trajectory in terms of reduction in numbers and/or occupied area for the preserved mitigation population that can be attributed to management (i.e., that are not the result of local weather patterns, as determined by monitoring of a nearby reference population, or other factors unrelated to management); and
- contingency measures for mitigation elements that do not meet performance criteria.

The HMMP will be prepared by a qualified plant or restoration ecologist. Approval of the HMMP by the City will be required before the project impact occurs.

6.1.2 Impacts on CRPR 3 or 4 Plants (Less than Significant)

Santa Clara red ribbons, categorized by the CNPS as CRPR 4 has the potential to occur within the study area (Section 5.1, Appendix B). If present, project development may affect this species due to disturbance of individuals within the population and disturbance or destruction of suitable habitat. Direct impacts could include grading or filling areas supporting this species, trampling or crushing of plants, and soil compaction. Indirect impacts could include increased mobilization of dust onto plants, which can affect their photosynthesis and respiration.

Santa Clara red ribbons is designated as a CRPR 4.3 species, which is defined by CNPS as “plants of limited distribution - a watch list”. Additionally, the .3 designation indicates that this species is “not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)” (CNPS 2019). The study area occurs within the heart of the range for this species, and any populations occurring within the study area would not represent a range expansion for this species nor a population at the periphery of the species range. Further, the narrow and linear nature of the project make it unlikely that project activities would result in impacts on an entire population of Santa Clara red ribbons, unless that population is very small. Due to its regional distribution, a loss of a small population in this area would not rise to the standards of a significant impact under CEQA.

Despite this, surveys for Santa Clara red ribbons would be conducted concurrently with surveys for the CRPR 1 and 2 species described above. If Santa Clara red ribbons occurs within the project alignment, the trail would be rerouted if feasible to avoid impacts to the population. The feasibility of trail rerouting would be determined

by the project team. This is not considered a mitigation measure because any impacts to this species would be considered less than significant under CEQA Criterion A, and surveys and potential avoidance is being conducted voluntarily by the City.

6.1.3 Impacts on the California Red-legged Frog (Less than Significant with Mitigation)

There are three records of the California red-legged frog (federally listed as threatened and a California species of special concern) within 3 mi of the study area, including one record from Saratoga Creek, at a location approximately 0.3 mi of the study area (CNDDB 2019). While no high-quality breeding habitat for the California red-legged frog is present in the study area, this species may use streams and associated riparian corridors in the study area as foraging and/or dispersal habitat.

Project activities would not result in the loss of breeding habitat for the California red-legged frog. However, suitable foraging and dispersal habitat would be disturbed. This impact would be temporary, occurring only during trail construction and maintenance activities. In addition, if individuals are present during construction activities, grading, excavation, and ground disturbance associated with construction of the trail, retaining walls, and bridge abutments, could result in injury or mortality of individuals, a significant impact (Significance Criterion A) due to the species regional rarity. Seasonal movements may be temporarily affected during construction activities because of disturbance, and substrate vibrations may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation. In addition, petrochemicals, hydraulic fluids, and solvents that are spilled or leaked from construction vehicles or equipment may kill individuals. Further, increases in human concentration and activity in the vicinity of suitable habitat may result in an increase in native and non-native predators that would be attracted to trash left at the work site and that would prey opportunistically on individuals of this species. Implementation of Mitigation Measures 4–6, as well as Mitigation Measure 11, BMPs for Work within Sensitive Habitats, as described under Impact 6.2.2 below, would reduce project impacts on the California red-legged frog to a less-than-significant level.

Mitigation Measure 4. Worker Environmental Awareness Program. Before any construction activities begin, the City will hire a qualified biologist who will conduct a training session for all construction personnel. At a minimum, the training will include descriptions of all special-status species potentially occurring on the project site and their habitats, the importance of these species, the general measures that are being implemented to conserve them as they relate to the proposed project, and the boundaries within which project activities may be accomplished.

Mitigation Measure 5. Avoidance. Because dusk and dawn are often the times when the red-legged frog is most actively moving and foraging, to the maximum extent practicable, earthmoving and other project activities will cease no less than 30 minutes before sunset and will not begin again prior to 30 minutes after sunrise. Further, to the extent practicable, ground-disturbing activities will be avoided from October through April because that is when red-legged frogs are most likely to be moving through upland areas. When ground-disturbing activities must take place between November 1 and March 31, the following measures will be implemented.

Mitigation Measure 6. Pre-activity Survey. A qualified biologist will conduct a preconstruction survey for the California red-legged frog prior to initial ground disturbing activities within 100 ft of any stream crossing and will remain on-site to monitor during all initial ground-disturbing activities within this area. If a California red-legged frog is encountered in the work area, all activities with the potential to result in the harassment, injury, or death of the individual will be immediately halted and will not resume until the individual leaves the project site of its own accord.

6.1.4 Impacts on the Santa Cruz Black Salamander and California Giant Salamander, (Less than Significant with Mitigation)

The Santa Cruz black salamander and California giant salamander (both California species of special concern) are typically found in moist forests and riparian zones in or near streams or seeps. The mixed riparian forest in the study area provides suitable breeding and foraging habitat for these species. The Santa Cruz black salamander is mostly terrestrial and lays eggs in cavities below ground. California giant salamanders are both terrestrial and aquatic with breeding and larval development occurring in clear, cold rivers, creeks, and ponds. Because project impacts on these species would be similar, they are assessed together.

The project would not result in the loss of any aquatic breeding habitat for the California giant salamander. Construction activities, particularly tree removal, would result in the permanent loss of a small amount of riparian habitat (i.e., potential breeding habitat for the Santa Cruz black salamander). However, because of the relatively small amount of riparian habitat that would be affected relative to the extent of suitable riparian habitat in the region, impacts on breeding habitat for the Santa Cruz black salamander would be considered less than significant.

If Santa Cruz black salamanders or California giant salamanders are present during project activities, individuals would be at risk for injury or mortality due to equipment, vehicle traffic, and foot traffic, a potentially significant impact (Significance Criterion A) due to the species regional rarity. In addition, substrate vibrations may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation; may interfere with predator detection; and may result in a decrease in time spent foraging. Such impacts would be temporary in nature, occurring only during construction or maintenance activities. Implementation of Mitigation Measure 4, as described above for the California red-legged frog; Mitigation Measure 11, as described under Impact 6.2.2 below; and Mitigation Measure 7 would reduce project impacts on these species to a less-than-significant level.

Mitigation Measure 7. Pre-activity Survey. A qualified biologist will conduct a preconstruction survey for special-status amphibians and reptiles prior to initial ground disturbing activities within 100 ft of any stream crossing and will remain on-site to monitor during all initial ground-disturbing activities within this area. If a species of special concern is encountered in the work area, all activities with the potential to result in the harassment, injury, or death of the individual will be immediately halted and the following measures implemented:

- If eggs or larvae are found, the qualified biologist will establish a buffer around the location of the eggs/larvae and work may proceed outside of the buffer zone. No work will occur within the buffer zone. Work within the buffer zone will be rescheduled until the time that eggs have hatched and/or larvae have metamorphosed.
- If an adult is found, the individual will be captured and relocated to a safe location outside of the work area by a qualified biologist, after which work may proceed.

6.1.5 Impacts on the Western Pond Turtle (Less than Significant with Mitigation)

Suitable habitat for the western pond turtle, a California species of special concern, consists of ponds or instream pools (i.e., slack water environments) with available basking sites, nearby upland areas with clay or silty soils for nesting, and shallow aquatic habitat with emergent vegetation and invertebrate prey for juveniles (Jennings and Hayes 1994). The study area provides marginal quality basking habitat for western pond turtles due to the paucity of open water and basking sites. Therefore, there is a low probability of this species using the study area for nesting. However, pond turtles may use the study area, especially the riparian corridors, for dispersal.

The project would not result in the loss of any aquatic habitat for the western pond turtle or in a substantial loss of upland dispersal habitat. However, individuals are present during project activities, they would be at risk for injury or mortality due to equipment, vehicle traffic, and foot traffic, a potentially significant impact (Significance Criterion A) due to the species regional rarity. Such impacts would be temporary in nature, occurring only during construction or maintenance activities. Including the western pond turtle when implementing Mitigation Measure 4, as described above for the California red-legged frog, and Mitigation Measure 7, as described for the California giant salamander and Santa Cruz black salamander, would reduce project impacts on the western pond turtle to a less-than-significant level.

6.1.6 Impacts on the Olive-sided Flycatcher (Less than Significant)

The olive-sided flycatcher (a California species of special concern when nesting) is associated with coniferous forest habitat and breeds in mature forests with open canopies, along forest edges in more densely vegetated areas, in recently burned forest habitats, and in selectively harvested landscapes (Altman and Sallabanks 2000; Robertson and Hutto 2007). The mixed evergreen forest and mixed riparian forest in the study area provides suitable nesting and foraging habitat for this species.

Project construction activities may affect olive-sided flycatcher nesting and foraging habitat and could possibly impact active nests, including eggs or nestlings. Construction activities, particularly tree removal, could result in the permanent loss of nesting habitat. However, because of the relatively small amount of forest habitat that would be affected relative to the extent of suitable habitat in the region, impacts on habitat for the olive-sided flycatcher would not rise to the CEQA standard of having a *substantial* adverse effect.

Adult olive-sided flycatchers are not expected to be killed or injured due to project activities because they could easily fly from the work site prior to such effects occurring. However, eggs or young in nests may be killed or injured as a result of destruction by construction personnel or equipment, or removal of vegetation containing nests. Further, nesting may be disrupted to the extent that nests would fail because of disturbance that was too frequent or too severe. In addition, project activities causing a substantial increase in noise, movement of equipment, or human presence may have a direct effect on the behavior of individuals causing them to avoid work sites and possibly exposing them to increased competition with other birds in the areas to which they disperse and increased levels of predation caused by unfamiliarity with the new area. These types of impacts are expected to occur primarily while construction or maintenance activities are ongoing. Increases in human concentration, including ongoing trail use, and activity associated with maintenance activities near suitable habitat also may result in an increase in native and non-native predators that would be attracted to trash left in the work site.

However, based on our site observations, the areal extent of the study area, and known breeding densities of this species, no more than two pairs of olive-sided flycatchers are expected to nest on or adjacent to the study area, if it is present at all. Therefore, the loss of individuals potentially resulting from project development would represent a very small fraction of the regional population of this species and would not rise to the CEQA standard of having a *substantial* adverse effect. Nevertheless, all native bird species, including the olive-sided flycatcher are protected from direct take by federal and state statutes (see Impact 6.4 below).

6.1.7 Impacts on the San Francisco Dusky-footed Woodrat (Less than Significant with Mitigation)

The San Francisco dusky-footed woodrat (a California species of special concern) is known to occur throughout the study area, and numerous nests were documented along portions of the alignment during the reconnaissance survey. Project activities may result in the injury or mortality of dusky-footed woodrats because of equipment use and worker foot traffic, particularly when woodrats are taking refuge in their stick nests. Suitable habitat and nests may be directly lost as a result of clearing and grading for the proposed trail, retaining walls, and bridge abutments. Project construction could potentially result in the loss of tens of nests due to the species' abundance along the proposed trail's alignment.

Indirect impacts also could occur as a result of over-crowding (as individuals lost habitat and moved to areas that were already occupied) and increased risk of predation. As a result of the species' regional abundance and high reproductive capabilities, project impacts on dusky-footed woodrats would not have a substantial effect on regional populations. However, woodrats are very important ecologically in that they provide an important prey source for raptors (particularly owls) and for predatory mammals, and their nests also provide habitat for a wide variety of small mammals, reptiles, and amphibians. As a result, the loss of large numbers of woodrats and their nests would be a significant impact (Significance Criterion A). Implementation of Mitigation Measures 4, as described above, as well as Mitigation Measures 8 would reduce project impacts on the San Francisco dusky-footed woodrat and its habitat to a less-than-significant level.

Mitigation Measure 8. Preconstruction Surveys and Avoidance or Nest Relocation. Prior to any clearing of, or work within, woodland, riparian, and scrub habitats, a qualified biologist will conduct a survey for San Francisco dusky-footed woodrat nests. If active nests are determined to be present within or very close to the impact areas, the following measures will be implemented.

- Dusky-footed woodrats are year-round residents. Therefore, avoidance measures are limited to restricting project activities to avoid direct impacts on woodrats and their active nests to the extent feasible. Ideally, a minimum 5-ft buffer will be maintained between project activities and each nest to avoid disturbance. In some situations, a smaller buffer may be allowed if, in the opinion of a qualified biologist, removing the nest would be a greater impact than that anticipated as a result of project activities.
- If avoidance of active nests is not feasible, then the woodrats will be evicted from their nests prior to the removal of the nests and onset of any clearing or ground-disturbing activities to avoid injury or mortality of the woodrats. The nests will be dismantled and the nesting material moved to a new location outside the project's impact areas so that it can be used by woodrats to construct new nests. Prior to nest deconstruction, each active nest will be disturbed by a qualified wildlife biologist to the degree that all woodrats leave the nest and seek refuge out of the impact area. Whether the nest is on the ground or in a tree, the nest will be nudged to cause the woodrats to flee. The nest will then be dismantled and the nest material piled at the base of a nearby hardwood tree or shrub (preferably with refuge sites among the tree roots or with dense vegetation or other refugia nearby) outside of the impact area. The spacing between relocated nests will not be less than 100 ft, unless a qualified biologist has determined that the habitat can support higher densities of nests.

Implementation of Mitigation Measure 8 would be adequate to assure that impacts on dusky-footed woodrats and their habitat would be less than significant. Because the species' habitats are relatively widespread, impacts on its habitat would not require additional species-specific mitigation.

6.1.8 Impacts on Pallid Bats (Less than Significant with Mitigation)

The pallid bat, a California species of special concern, may forage throughout the study area. In addition, several larger trees with small to moderate-sized cavities were observed along the project alignment during the reconnaissance survey. These trees provide suitable roosting and breeding habitat for the pallid bat and removal of such trees could result in the loss of pallid bat roost sites. When trees containing roosting colonies or individual pallid bats are removed or modified, individual bats could be physically injured or killed; could be subjected to physiological stress from being disturbed during torpor; or could face increased predation because of exposure during daylight. In addition, nursing young may be subjected to disturbance-related abandonment by their mothers. Proposed project-related disturbance near a maternity roost of pallid bats, could cause females to abandon their young. Such impacts could be significant (Significance Criterion A) because the species' population and available roosting habitat are limited locally and regionally and because loss of habitat or

individuals may have a substantial adverse effect on local and regional populations of the species. Implementation of Mitigation Measures 9 and 10 would reduce project impacts on the pallid bat to a less-than-significant level.

Mitigation Measure 9. Protect Bat Colonies. To minimize impacts on pallid bats the following measures will be implemented:

- A pre-activity survey for roosting pallid bats will be conducted prior to the onset of ground-disturbing activities. A qualified bat biologist will conduct a survey to look for evidence of bat use within suitable habitat. If evidence of use is observed, or if high-quality roost sites are present in areas where evidence of bat use might not be detectable (such as a tree cavity), an evening survey and/or a nocturnal acoustic survey may be necessary to determine if a bat colony is present and to identify the specific location of the bat colony.
- If no active maternity colony or non-breeding bat roost is located, project work can continue as planned.
- If an active pallid bat maternity colony or non-breeding roost is located, the project work will be redesigned to avoid disturbance of the roosts, if feasible.
- If an active maternity colony is located and project work cannot be redesigned to avoid removal or disturbance of the occupied tree, disturbance will be scheduled to take place outside the maternity roost season (March 15–July 31), and a disturbance-free buffer zone (determined by a qualified bat biologist) will be implemented during the maternity roost season.
- If an active non-breeding bat roost is located and project work cannot be redesigned to avoid removal or disturbance of the occupied tree, the individuals will be safely evicted between August 1 and October 15 or between February 15 and March 15 (as determined by a Memorandum of Understanding with CDFW). Bats may be evicted through exclusion after notifying CDFW. Trees with roosts that must be removed will first be disturbed at dusk, just before removal that same evening, to allow bats to escape during the darker hours. Mitigation Measure 10 (Provide Alternative Bat Roost Habitat) may need to be implemented subsequently.

Mitigation Measure 10. Provide Alternative Bat Roost Habitat. If, after implementation of Mitigation Measure 9, a qualified bat biologist identifies a tree containing a pallid bat maternity roost that is to be removed by project activities, a qualified bat biologist will design and determine an appropriate location for an alternative roost structure. If a tree containing a pallid bat maternity roost is not removed, but project-related disturbance causes the abandonment of the roost site (even during the non-breeding season), then the City will either monitor the roost site to determine whether the affected species returns to the roost, or construct an alternative roost. If the City elects to monitor the roost and bats do not return within one year, then an alternative roost will be constructed.

A qualified bat biologist will determine the appropriate location for the alternative roost structure, based on the location of the original roost and habitat conditions in the vicinity, and oversee installation of a new roost structure. The roost structure either will be built to specifications determined by a qualified bat biologist, or will be purchased from an appropriate vendor. The structure will be placed as close to the affected roost site as feasible. The City will monitor the roost for up to three years (or until occupancy is determined, whichever occurs first) to determine use by bats. If, by Year 3, pallid bats are not using the structure, a qualified bat biologist, in consultation with CDFW, will identify alternative roost designs or locations for placement of the roost, place the new roost at the agreed-upon location, and monitor the new roost for an additional three years (or until occupancy has been verified).

6.2 Impacts on Sensitive Communities: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

6.2.1 Impacts on Mixed Evergreen Forest (Less than Significant)

As discussed above in section 5.3, the mixed evergreen forest within the study area falls within the *Umbellularia californica* forest alliance and is considered a sensitive habitat by CDFW. This alliance is ranked as G4/S3 by CDFW. This means there are greater than 100 viable occurrences worldwide and/or more than 12,950 hectares, and there are 21–100 viable occurrences statewide and/or more than 2,590–12,950 hectares. Therefore, impacts on this alliance type would be potentially significant under CEQA (Significance Criterion B).

The project would impact up to 6.18 ac of mixed evergreen forest. However, the vast majority of the study area and adjacent habitat is composed of this alliance type. Additionally, this alliance is common on a regional level, and is known to occur extensively in the Santa Cruz Mountains (Sawyer et al 2009). Furthermore, impacts from trail construction would be minor within this alliance type. Understory vegetation is sparse and undeveloped, and most trail construction would only result in soil disturbance and would not impact a substantial amount of vegetation. Overstory vegetation would be left mostly intact, with four California bay trees currently slated for removal. Additional California bay trees may be removed during the course of project implementation, however, the number of trees would be minimal, and would be insignificant considering the prevalence of California bay within the study area specifically and in the region generally. California bay is a particularly robust species, and any removed trees would likely regenerate naturally from stump or root stock. Based upon this alliance's local and regional abundance and the minor nature of impacts project implementation would cause, impacts on mixed evergreen forest are considered less than significant.

6.2.2 Impacts on Mixed Riparian Forest (Less than Significant with Mitigation)

Riparian habitats are unique areas that surround river and stream banks and contribute disproportionately high habitat values and functions for their limited surface area. Specially-adapted plants that may tolerate repeated

flooding or that rely on a high water table often occur in these areas, but even when it supports primarily upland species, this vegetation is important for stabilizing the banks, reducing soil erosion, and maintaining water quality within the stream channel, and the amount and type of vegetation present can have effects on water temperature and therefore aquatic habitat within the stream. Riparian corridor vegetation also provides specialized habitat for wildlife, including shade, breeding areas, and food sources. Riparian habitats are uncommon within the larger landscape. Riparian areas are considered sensitive habitats by the CDFW and are regulated as such under Section 1600 of the California Fish and Game Code.

Construction of the trail and associated bridges would result in minor impacts (0.03 ac) on mixed riparian forest within the study area. The project has avoided and minimized riparian impacts by designing clear span bridges for the four trail crossings that will introduce only minor abutment-related impacts on the riparian banks. However, riparian vegetation removal would occur, and would include the removal of at least one 18-inch diameter California bay tree. Vegetation recovery would be limited underneath the bridge crossings due to bridge shading. In addition, indirect impacts could occur in the form of equipment spills and bank destabilization, if not avoided. Loss of riparian vegetation would constitute a significant impact under CEQA (Significance Criterion B) owing to the importance of this habitat type to regional biodiversity. Implementation of the mitigation measures listed below would reduce impacts on riparian habitat to a less-than-significant level.

Mitigation Measure 11. BMPs for Work within Sensitive Habitats. The following measures will be implemented to reduce impacts on mixed riparian forest and the associated streams. Additionally, the project will acquire permits from CDFW and RWQCB and follow all requirements and avoidance and minimization measures listed therein.

- Personnel will prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water into channels.
- Spill prevention kits will always be in close proximity when using hazardous materials.
- No equipment servicing will be done in the stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators).
- Personnel will use the appropriate equipment for the job that minimizes disturbance to the stream bottom. Appropriately-tired vehicles, either tracked or wheeled, will be used depending on the situation
- Temporary fills, such as for access ramps or scaffolding, will be completely removed upon finishing the work.
- Existing native vegetation will be retained by removing only as much vegetation as necessary to accommodate the trail clearing width.
- If riparian vegetation is to be removed with chainsaws, consider using saws currently available that operate with vegetable-based bar oil
- Control exposed soil by stabilizing slopes (e.g., with erosion control blankets) and protecting channels (e.g., using silt fences or straw wattles).

- Control sediment runoff using sandbag barriers or straw wattles.
- Stabilize site ingress/egress locations.
- Temporary disturbance or removal of aquatic and riparian vegetation will not exceed the minimum necessary to complete the work.
- Vehicles operated within and adjacent to streams will be checked and maintained daily to prevent leaks of materials that, if introduced to the water, could be deleterious to aquatic life.
- Potential contaminating materials must be stored in covered storage areas or secondary containment that is impervious to leaks and spills
- All disturbed soils will be revegetated with native plants suitable for the altered soil conditions upon completion of construction. Local watershed native plants will be used if available. All disturbed areas that have been compacted shall be de-compacted prior to planting or seeding. Cut-and-fill slopes will be planted with local native or non-invasive plants suitable for the altered soil conditions.

Mitigation Measure 12. Mitigation Plantings for Permanent Loss of Riparian Trees. All trees removed within mixed riparian forest habitat will be replaced at a ratio of 1:1 (mitigation stems: impacted stems). Trees to be removed likely consist of only California bay, a tree which is very abundant within riparian areas in the study area and the vicinity. Replaced trees will preferably consist of the same species which was removed during project implementation, and be planted within the same reach where impacts occur. Irrigation will not be installed, so the replacement trees must be planted low enough on the riparian banks to anticipate intercepting seasonal groundwater. Replacement trees will be monitored annually for three years and replaced to 100% survivorship through Year 3.

6.3 Impacts on Wetlands: Have a substantial adverse effect on state or federally protected wetlands (Less than Significant with Mitigation)

Wetlands and other waters provide substantial habitat value for wildlife, providing foraging and dispersal opportunities for aquatic-dependent species. Additionally, these habitats are considered sensitive by regulatory agencies. Wetlands do not occur within the study area, however, the proposed project could impact sensitive stream habitats on the project site that fall under the jurisdiction of the USACE, RWQCB, and CDFW.

Development of areas near creeks can negatively impact water quality. In order to eliminate direct impacts on sensitive creek habitat, the project has been designed to utilize clear span bridges at all four stream crossings, with any required footings located above the ordinary high water mark. Therefore, no direct impacts would occur within jurisdictional other waters habitat. Nevertheless, indirect impacts could still occur due to equipment spills and bank destabilization, which could adversely affect water quality. Implementation of Mitigation Measure 11, discussed above, would reduce these impacts to a less-than-significant level.

6.4 Impacts on Wildlife Movement: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with

established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites (Less than Significant)

For many species, the landscape is a mosaic of suitable and unsuitable habitat types. Environmental corridors are segments of land that provide a link between these different habitats while also providing cover. Development that fragments natural habitats (i.e., breaks them into smaller, disjunct pieces) can have a twofold impact on wildlife: first, as habitat patches become smaller they are unable to support as many individuals (patch size); and second, the area between habitat patches may be unsuitable for wildlife species to traverse (connectivity).

The study area is located in mixed evergreen forest, riparian woodland, and an existing approximately 100-ft wide powerline right-of-way. Although construction of the trail would create a narrow corridor (a 5-ft wide trail) through existing natural communities, it would result in negligible loss of habitat and animals would continue to be able to move across the trail after it is completed. Moreover, because construction of the trail is expected to require removal of only a handful of trees, no substantial changes in canopy cover or forest composition would result from project implementation.

The vegetation communities along streams and rivers often function as wildlife movement corridors, and in the study area Congress Springs Creek and other tributaries to Saratoga Creek are expected to function as such. Although the proposed trail alignment crosses streams at four locations, all four crossings would be composed of clear span bridges. Therefore, following completion of construction, the project would not impede the movement of species moving along the riparian corridors.

Noise and disturbance associated with trail construction, ongoing trail maintenance activities, and trail use by humans could cause species that commonly use habitats within the study area for dispersal to temporarily avoid moving through the site. The loudest noise would be associated with construction (including helicopter delivery of bridges) and temporary maintenance activities, and once such activities are complete, wildlife use of the surrounding areas would be similar to existing conditions. It is likely that trail use by humans will inhibit movement of some more sensitive wildlife species, such as mountain lions (*Puma concolor*), through the site, as this species is particularly sensitive to human activity. However, ample opportunity exists for movement by this species in the vicinity of the project site (either in other locations or when humans are not actively using the trail), and while dispersal or habitat use by this species may be limited by the introduction of human activity to this trail site, impacts on regional mountain lion populations or movements are not expected to be substantial. Thus, the proposed project would not interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors and this impact would be less than significant.

Disturbance related to construction activities, maintenance, and post-construction trail use during the bird breeding season (February 1 through August 31, for most species) could result in the incidental loss of eggs or nestlings, either directly through the destruction or disturbance of active nests or indirectly by causing the abandonment of nests located near the trail. In particular, delivery of bridges via helicopter would introduce

substantial noise, and rotor wash could physically impact nests by knocking nests, eggs, or young out of trees. However, the habitats in the study area represent a very small proportion of the habitats that support these species regionally. In addition, all species of birds currently using the study area are expected to continue to nest and forage on the site after project construction is completed because no substantial loss of habitat would occur and use of the trail following its completion would be limited to low impact activities such as hiking/jogging and horseback riding. Therefore, project impacts on common nesting and foraging birds due to disturbance would not rise to the CEQA standard of having a *substantial* adverse effect, and these impacts would not constitute a significant impact on these species or their habitats under CEQA. However, all native bird species are protected from direct take by federal and state statutes (see Sections 3.1.5 and 3.2.4). Therefore, we recommend that the following measures be implemented to ensure that project activities comply with the MBTA and California Fish and Game Code:

Measure A. Avoidance. To the extent feasible, construction activities should be scheduled to avoid the nesting season. If construction activities are scheduled to take place outside the nesting season, all impacts on nesting birds protected under the MBTA and California Fish and Game Code would be avoided. The nesting season for most birds in the project region extends from February 1 through August 31.

Measure B. Preconstruction Surveys. If it is not possible to schedule construction activities between September 1 and January 31 then preconstruction surveys for nesting birds should be conducted by a qualified ornithologist to ensure that no nests will be disturbed during project construction. We recommend that these surveys be conducted no more than seven days prior to the initiation of construction activities. During this survey, the ornithologist should inspect all trees and other potential nesting habitats (e.g., trees, shrubs, ruderal grasslands, buildings) in and immediately adjacent to the impact areas for nests.

Measure C. Buffers. If an active nest is found sufficiently close to work areas to be disturbed by project activities, the ornithologist should determine the extent of a construction-free buffer zone to be established around the nest (typically 300 ft for raptors and 100 ft for other species), to ensure that no nests of species protected by the MBTA and California Fish and Game Code would be disturbed during project implementation.

6.5 Impacts due to Conflicts with Local Policies: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (No Impact)

6.5.1 Santa Clara Tree Preservation and Removal Ordinance (No Impact)

Per the County of Santa Clara Tree Preservation and Removal Ordinance (County Code, §C16.1 to §C16.17), permits from the County are required for removal of any tree which meets the definition of protected tree, as defined in Section 3.3.1 above. No trees within the portion of the study area in unincorporated Santa Clara County meet the definition of protected trees, due to the parcels being located within the “Hillside” zoning

district and being greater than 3 ac in size. Therefore, there would be no impact regarding conflicts with the County of Santa Clara Tree Preservation and Removal Ordinance.

6.5.2 City of Saratoga Tree Ordinance (No Impact)

Per City of Saratoga Municipal Code Chapter 15, permission to remove protected trees may be granted as part of approval of other development permits. However, the Tree Ordinance only applies to private development projects, and not to projects implemented by the City itself. Further, implementation of Mitigation Measure 12 would replace all trees lost at a ratio of 1:1. Therefore, there would be no impact regarding conflicts with the City of Saratoga Tree Ordinance.

6.6 Impact due to Conflicts with an Adopted Habitat Conservation Plan: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (No Impact)

The study area is not located within an area covered by an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, the project would not conflict with any such plans.

6.7 Cumulative Impacts

Cumulative impacts arise due to the linking of impacts from past, current, and reasonably foreseeable future projects in the region. In Saratoga where the project is located, such projects include the Mountain Winery Annexation, John Henry House Relocation, and a mixed use project at 3rd Street and Big Basin Way. The 3rd Street project site is located on a previously modified, predominantly paved parcel in downtown Saratoga. Thus, this project is not expected to impact any of the special-status species potentially affected by the proposed Saratoga to Sanborn Trail Project or to result in any direct impacts on wetlands or other sensitive habitats. Similarly, the proposed relocation of the John Henry House and construction of a mixed-use commercial/office building would occur at an already developed, urban location and is not expected to impact special-status species or sensitive habitats. Thus, the cumulative impact on biological resources resulting from the proposed project in combination with these two projects is not expected to be significant.

The Mountain Winery Annexation project has the potential to impact natural habitat similar to those on the proposed project site. Thus, this project, as well as any development that occurs in the future in similar habitats in this region, would result in potential impacts on many of the same types of biological resources that would be impacted by construction activities for the proposed project. The cumulative impact on biological resources resulting from the proposed project in combination with other projects in the project area and larger region would be dependent on the relative magnitude of adverse effects of these projects on biological resources compared to the relative benefit of impact avoidance and minimization efforts prescribed by planning documents, CEQA mitigation measures, and permit requirements for each project; compensatory mitigation

and proactive conservation measures associated with each project. In the absence of such avoidance, minimization, compensatory mitigation, and conservation measures, cumulatively significant impacts on biological resources would occur.

However, the City of Saratoga General Plan contains conservation measures that would benefit biological resources, as well as measures to avoid, minimize, and mitigate impacts on these resources. Further, it is expected that most current and future projects in the region, including the projects listed above, will have to mitigate project impacts through the CEQA, Fish and Game Code 1602, or Clean Water Act Section 404/401 permitting process, and possibly FESA and CESA consultation. As a result, these other projects are expected to implement mitigation for substantial impacts on biological resources as is being required of the proposed project. Thus, provided that this project successfully incorporates the mitigation measures described in this biological resources report, the project would not have a cumulatively considerable contribution to substantial cumulative impacts on biological resources.

Section 7. References

- Altman, B., and R. Sallabanks. 2000. Olive-sided flycatcher (*Contopus cooperi*) in A. Poole and F. Gill, editors. The Birds of North America. The Birds of North America, Inc., Philadelphia.
- Barbour, R.W. and W.H. Davis. 1969. Bats of America. University of Kentucky Press, Lexington, Kentucky.
- Bousman, W.G. 2007. Olive-sided flycatcher *Contopus cooperi*. Pages 272-273 in W.G. Bousman, editor. Breeding bird atlas of Santa Clara County. Santa Clara Valley Audubon Society, Cupertino, California.
- Bulger, J.B., N.J. Scott, Jr., and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. Biological Conservation 110: 85-95.
- Bury, R.B., and D.J. Germano. 2008. *Actinemys marmorata* (Baird and Girard 1852) - western pond turtle, Pacific pond turtle in G.J. Rhodin, C.H. Pritchard, P.P. van Dijk, R.A. Saumure, K.A. Buhlmann, and J.B. Iverson, editors. Conservation biology of freshwater turtles and tortoises: A compilation project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group. Chelonian Research Monographs.
- Carraway L.N., and B.J. Verts. 1991. *Neotoma fuscipes*. Mammalian Species No. 386, The American Society of Mammalogists. 10 pp.
- [CDFW] California Department of Fish and Wildlife. 2019. VegCAMP Natural Communities Lists. <<https://www.wildlife.ca.gov/data/vegcamp/natural-communities>>. Accessed March 2019.
- [CNDDB] California Natural Diversity Database. 2019. Rarefind 5.0. California Department of Fish and Wildlife. (Accessed through April 2019) from <http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp>.
- [CNPS] California Native Plant Society. 2019. Inventory of Rare and Endangered Plants (9.0 online edition). Accessed March 2019 from <http://www.cnps.org/inventory>.
- City of Saratoga. 2007. Open Space and Conservation Element 2007. City of Saratoga, California. Background Report and Goals, Policies, and Implementation Measures. June 6, 2007.
- City of Saratoga. 2014. Saratoga Quarry Park Master Plan Initial Study.

- Cornell Lab of Ornithology 2019. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed through April 2019).
- Faber-Langendoen, D., J. Nichols, L. Master, K. Snow, A. Tomaino, R. Bittman, G. Hammerson, B. Heidel, L. Ramsay, A. Teucher, and B. Young. 2012. NatureServe Conservation Status Assessments: Methodology for Assigning Ranks. NatureServe, Arlington, VA.
- Fellers, G.M. 2005. *Rana draytonii* California red-legged frog. In M. Lannoo, ed. Amphibian Declines: The Conservation Status of United States Species. University of California Press. CA: Berkeley. Pp 552-554.
- Fellers, G.M., and P.M. Kleeman. 2007. California red-legged frog (*Rana draytonii*) movement and habitat use: implications for conservation. *Journal of Herpetology* 41(2): 276-286.
- Ferguson, H., and J. M. Azerrad. 2004. Pallid bat *Antrozous pallidus*. In Management recommendations for Washington's priority species - Volume V: Mammals: Washington Department of Fish and Wildlife.
- Google Inc. 2019. Google Earth (Version 7.3.0.3832) [Software]. Available from earth.google.com.
- H. T. Harvey & Associates. 1997. Red-legged frog distribution and status - 1997. Prepared for the Santa Clara Valley Water District.
- H. T. Harvey & Associates. 1999. Santa Clara Valley Water District western pond turtle distribution and status - 1999.
- Hall, E.R. 1981. The mammals of North America. 2nd edition. Volume II. John Wiley and Sons, New York, New York.
- Haynie, M.L., C.F. Fulhorst, M. Rood, S.G. Bennett, B.D. Hess, and R.D. Bradley. 2007. Genetic variation in multilocus microsatellite genotypes in two species of woodrats (*Neotoma macrotis* and *N. fuscipes*). *California Journal of Mammalogy* 88:745-758.
- Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game.
- Jennings, M.R., and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. California Department of Fish and Game, Inland Fisheries Division.
- Johnston, D.S., B. Hepburn, J. Krauel, T. Stewart, and D. Rambaldini. 2006. Winter roosting and foraging ecology of pallid bats in Central Coastal California. *Bat Research News* 47:115.

- Kucera, T. 1997. California Giant Salamander (*Dicamptodon ensatus*). California Department of Fish and Game. <http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1510>. Accessed April 2019.
- Kunz, T.H., and R.A. Martin. 1982. *Plecotus townsendii*. Mammalian Species 175:1-6.
- Lee, D.E., and W.D. Tietje. 2005. Dusky-footed woodrat demography and prescribed fire in a California oak woodland. Journal of Wildlife Management 69(3):1211-1220.
- Leidy, R.A., G.S. Becker, B.N. Harvey. 2005. Historical distribution and current status of steelhead/rainbow trout (*Oncorhynchus mykiss*) in streams of the San Francisco Estuary, California. Center for Ecosystem Management and Restoration, Oakland, CA.
- [NMFS] National Marine Fisheries Service. 2019. Essential Fish Habitat Mapper. [\[https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper\]](https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper) [Accessed April 17, 2019].
- [NRCS] Natural Resources Conservation Service. 2019. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed April 2019.
- PISCES. 2019. California Fish Website. University of California, Division of Agriculture and Natural Resources. http://calfish.ucdavis.edu/PISCES_Distribution_Maps/ [Accessed April 2019].
- Robertson, B.A., and R.L. Hutto. 2007. Is selectively harvested forest an ecological trap for olive-sided flycatchers? Condor 109:109-121.
- Rottenborn, S. 2007. Vaux's swift. pp. 244–245 in Breeding Bird Atlas of Santa Clara County, California. Santa Clara Valley Audubon Society, Cupertino, California. 547 p.
- Safford, H.D., J.H. Viers, and S.P. Harrison. 2005. Serpentine Endemism in the California Flora: A Database of Serpentine Affinity. Madrono 52(4):222-257.
- Sawyer, J.O., T. Keeler-Wolf and J.M. Evens. 2009. A Manual of California Vegetation [online]. Second Edition. California Native Plant Society.
- [SAS] Sequoia Audubon Society. 2001. San Mateo County Breeding Bird Atlas. 224 p.
- Sherwin, R., and A. Piaggio. 2005. *Corynorhinus townsendii*. Western Bat Working Group. Available from http://wbwg.org/species_accounts/vespertilionidae/coto.pdf (accessed May 2011).
- Stebbins, R.C., and S.M. McGinnis. 2012. Field Guide to Amphibians and Reptiles of California. Revised Edition. University of California Press. 537 p.

- Thomson, R.C., A.N. Wright, and H.B. Shaffer. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press.
- [USFWS] U.S. Fish and Wildlife Service. 1996. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the California Red-legged Frog. Federal Register 61:25813-26833.
- [USFWS] U.S. Fish and Wildlife Service. 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Region 1.
- [USFWS] U.S. Fish and Wildlife Service. 2010. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for California Red-legged Frog; Final Rule. Federal Register 75:12815-12959.
- [USFWS] U.S. Fish and Wildlife Service. 2019. Environmental Conservation Online System [Accessed through April 2019; <https://ecos.fws.gov/ipac/>].
- Widdowson, W.P. 2008. Olive-sided flycatcher (*Contopus cooperi*). in W.D. Shuford, and T. Gardali, editors. California bird species of special concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Western Field Ornithologists and California Department of Fish and Game, Camarillo, California.
- Wilson, D.E. and S. Ruff. 1999. The Smithsonian book of North American mammals. Smithsonian Institution Press, Washington, D. C.
- Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, editors. 1990. California's Wildlife. Volume II: Birds. California Department of Fish and Game, Sacramento, California
- Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, editors. 1990. California's wildlife. Volume III: Mammals. California Department of Fish and Game, Sacramento, California.

Appendix A. Plants Observed

Family	Scientific Name	Common Name
Agavaceae	<i>Chlorogalum pomeridianum</i>	soap plant
Anacardiaceae	<i>Toxicodendron diversilobum</i>	poison oak
Apaiceae	<i>Sanicula crassicaulis</i>	gamble weed
Apiaceae	<i>Torilis arvensis</i>	field hedge parsley
Asteraceae	<i>Baccharis pilularis</i>	coyote brush
Asteraceae	<i>Carduus pycnocephalus</i>	Italian thistle
Asteraceae	<i>Cirsium vulgare</i>	bull thistle
Betulaceae	<i>Corylus cornuta</i>	beaked hazelnut
Boraginaceae	<i>Cynoglossum grande</i>	western houndstongue
Boraginaceae	<i>Eriodictyon californica</i>	yerba santa
Brassicaceae	<i>Cardamine californica</i>	milk maids
Caprifoliaceae	<i>Lonicera</i> sp.	honeysuckle
Caryophyllaceae	<i>Stellaria media</i>	chickweed
Cucurbitaceae	<i>Marah fabacea</i>	California man-root
Dennstaedtiaceae	<i>Pteridium aquilinum</i> var. <i>pubescens</i>	western bracken fern
Ericaceae	<i>Arbutus menziesii</i>	pacific madrone
Ericaceae	<i>Arctostaphylos glauca</i>	big bierry manzanita
Fabaceae	<i>Acmispon glaber</i>	deerweed
Fabaceae	<i>Cytisus scoparius</i>	scotch broom
Fagaceae	<i>Notholithocapus densiflorus</i>	tanoak
Fagaceae	<i>Quercus agrifolia</i>	coast live oak
Fagaceae	<i>Quercus parvula</i> var. <i>shrevei</i>	Shreve's oak
Grossularuaceae	<i>Ribes</i> sp.	gooseberry
Lamiaceae	<i>Clinopodium douglasii</i>	yerba buena
Lamiaceae	<i>Clinopodium douglasii</i>	yerba buena
Lamiaceae	<i>Salvia mellifera</i>	black sage
Lauraceae	<i>Umbellularia californica</i>	bay laurel
Melanthiaceae	<i>Trillium ovatum</i>	pacific trillium
Montiaceae	<i>Claytonia parviflora</i>	narrow leaved miner's lettuce
Montiaceae	<i>Claytonia perfoliata</i>	Miner's lettuce
Oxalidaceae	<i>Oxalis pes-capre</i>	bermuda buttercup
Phrymaceae	<i>Diplacus aurantiacus</i>	sticky monkeyflower
Pinaceae	<i>Pseudotsuga menziesii</i>	Douglas fir
Poaceae	<i>Elymus glaucus</i>	blue wildrye

Appendix B. Special-Status Plants Considered for Potential Occurrence

Common Name	Scientific Name	Suitable Habitat Absent	Edaphic Conditions Absent	Outside Elevation Range	Extirpated from Project Vicinity
Blasdale's bent grass	<i>Agrostis blasdalei</i>	x			
bent-flowered fiddleneck	<i>Amsinckia lunaris</i>				
Anderson's manzanita	<i>Arctostaphylos andersonii</i>	x			
Schreiber's manzanita	<i>Arctostaphylos glutinosa</i>	x	x		
Ohlone manzanita	<i>Arctostaphylos ohloneana</i>	x			
Kings Mountain manzanita	<i>Arctostaphylos regismontana</i>	x			
Bonny Doon manzanita	<i>Arctostaphylos silvicola</i>	x	x		
marsh sandwort	<i>Arenaria paludicola</i>	x	x		
Santa Cruz Mountains pussypaws	<i>Calyptidium parryi</i> var. <i>hesseae</i>	x	x		
swamp harebell	<i>Campanula californica</i>	x			
bristly sedge	<i>Carex comosa</i>	x			
deceiving sedge	<i>Carex saliniformis</i>	x		x	
Congdon's tarplant	<i>Centromadia parryi</i> ssp. <i>congdonii</i>	x			
Ben Lomond spineflower	<i>Chorizanthe pungens</i> var. <i>hartwegiana</i>	x	x		
Monterey spineflower	<i>Chorizanthe pungens</i> var. <i>pungens</i>	x	x		
Scotts Valley spineflower	<i>Chorizanthe robusta</i> var. <i>hartwegii</i>	x	x		
robust spineflower	<i>Chorizanthe robusta</i> var. <i>robusta</i>	x	x		
Mt. Hamilton fountain thistle	<i>Cirsium fontinale</i> var. <i>campylon</i>	x	x		
Santa Clara red ribbons	<i>Clarkia concinna</i> ssp. <i>automixa</i>				
San Francisco collinsia	<i>Collinsia multicolor</i>	x	x		
tear drop moss	<i>Dacryophyllum falcifolium</i>	x	x		
western leatherwood	<i>Dirca occidentalis</i>				
Santa Clara Valley dudleya	<i>Dudleya abramsii</i> ssp. <i>setchellii</i>	x	x		
Ben Lomond buckwheat	<i>Eriogonum nudum</i> var. <i>decurrens</i>	x	x		
San Mateo woolly sunflower	<i>Eriophyllum latilobum</i>	x			
Santa Cruz wallflower	<i>Erysimum teretifolium</i>	x	x		
fragrant fritillary	<i>Fritillaria liliacea</i>	x	x		
short-leaved evax	<i>Hesper-evax sparsiflora</i> var. <i>brevifolia</i>	x	x		
Santa Cruz cypress	<i>Hesperocyparis abramsiana</i> var. <i>abramsiana</i>	x			

Common Name	Scientific Name	Suitable Habitat Absent	Edaphic Conditions Absent	Outside Elevation Range	Extirpated from Project Vicinity
Butano Ridge cypress	<i>Hesperocyparis abramsiana</i> var. <i>butanoensis</i>	x	x		
Loma Prieta hoita	<i>Hoita strobilina</i>				
Santa Cruz tarplant	<i>Holocarpha macradenia</i>	x			
Kellogg's horkelia	<i>Horkelia cuneata</i> var. <i>sericea</i>	x			
Point Reyes horkelia	<i>Horkelia marinensis</i>	x			
legenere	<i>Legenere limosa</i>	x			
smooth lessingia	<i>Lessingia micradenia</i> var. <i>glabrata</i>	x	x		
arcuate bush-mallow	<i>Malacothamnus arcuatus</i>	x			
Hall's bush-mallow	<i>Malacothamnus hallii</i>	x	x		
marsh microseris	<i>Microseris paludosa</i>	x			
northern curly-leaved monardella	<i>Monardella sinuata</i> ssp. <i>nigrescens</i>	x			
woodland woollythreads	<i>Monolopia gracilens</i>				
Kellman's bristle moss	<i>Orthotrichum kellmanii</i>	x	x		
Dudley's lousewort	<i>Pedicularis dudleyi</i>	x			
Santa Cruz Mountains beardtongue	<i>Penstemon rattanii</i> var. <i>kleei</i>	x			
white-rayed pentachaeta	<i>Pentachaeta bellidiflora</i>	x	x		
Monterey pine	<i>Pinus radiata</i>	x		x	
white-flowered rein orchid	<i>Piperia candida</i>				
Choris' popcornflower	<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	x			
San Francisco popcornflower	<i>Plagiobothrys diffusus</i>	x			
hairless popcornflower	<i>Plagiobothrys glaber</i>	x		x	
Scotts Valley polygonum	<i>Polygonum hickmanii</i>	x	x		
chaparral ragwort	<i>Senecio aphanactis</i>	x	x		
Santa Cruz microseris	<i>Stebbinsoseris decipiens</i>	x	x		
most beautiful jewelflower	<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	x	x		
Santa Cruz clover	<i>Trifolium buckwestiorum</i>	x			
saline clover	<i>Trifolium hydrophilum</i>	x	x		
Pacific Grove clover	<i>Trifolium polyodon</i>	x			
coast rockcress	<i>Arabis blepharophylla</i>	x			
Brewer's calandrinia	<i>Calandrinia breweri</i>	x			
Oakland star-tulip	<i>Calochortus umbellatus</i>		x		
pink star-tulip	<i>Calochortus uniflorus</i>	x			
johnny-nip	<i>Castilleja ambigua</i> var. <i>ambigua</i>	x			

Common Name	Scientific Name	Suitable Habitat Absent	Edaphic Conditions Absent	Outside Elevation Range	Extirpated from Project Vicinity
Monterey Coast paintbrush	<i>Castilleja latifolia</i>	x	x	x	
Monterey ceanothus	<i>Ceanothus rigidus</i>	x	x		
Santa Clara red ribbons	<i>Clarkia concinna</i> ssp. <i>automixa</i>				
branching beach aster	<i>Corethrogyne leucophylla</i>	x		x	
clustered lady's-slipper	<i>Cypripedium fasciculatum</i>	x	x		
mountain lady's-slipper	<i>Cypripedium montanum</i>	x			
California bottle-brush grass	<i>Elymus californicus</i>				
San Francisco wallflower	<i>Erysimum franciscanum</i>	x	x		
stinkbells	<i>Fritillaria agrestis</i>	x			
San Francisco gumplant	<i>Grindelia hirsutula</i> var. <i>maritima</i>	x	x		
harlequin lotus	<i>Hosackia gracilis</i>	x			
serpentine leptosiphon	<i>Leptosiphon ambiguus</i>	x	x		
large-flowered leptosiphon	<i>Leptosiphon grandiflorus</i>	x	x		
redwood lily	<i>Lilium rubescens</i>	x			
small-leaved lomatium	<i>Lomatium parvifolium</i>	x	x		
Mt. Diablo cottonweed	<i>Micropus amphibolus</i>	x			
Santa Cruz County monkeyflower	<i>Mimulus rattanii</i> ssp. <i>decurtatus</i>	x			
Gairdner's yampah	<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>	x			
Michael's rein orchid	<i>Piperia michaelii</i>	x			
Hickman's popcornflower	<i>Plagiobothrys chorisianus</i> var. <i>hickmanii</i>	x		x	
Lobb's aquatic buttercup	<i>Ranunculus lobbii</i>	x			
Hoffmann's sanicle	<i>Sanicula hoffmannii</i>		x		
maple-leaved checkerbloom	<i>Sidalcea malachroides</i>	x			
marsh zigadenus	<i>Toxicoscordion fontanum</i>	x	x		

Appendix C. Detailed Descriptions of Special-Status Animal Species Potentially Occurring in the Study Area

Federal and State Listed Species

California Red-legged Frog (*Rana draytonii*). Federal status: Threatened; State status: Species of Special Concern. The California red-legged frog was listed as threatened in June 1996 (USFWS 1996) based largely on a significant range reduction and continued threats to surviving populations. Critical habitat was most recently designated in March 2010 (USFWS 2010), but designated critical habitat is not present in the study area. The historical distribution of the California red-legged frog extended from the city of Redding in the Central Valley and Point Reyes National Seashore along the coast, south to Baja California, Mexico. The species' current distribution includes isolated locations in the Sierra Nevada and the San Francisco Bay area, and along the central coast (USFWS 2002).

The California red-legged frog inhabits perennial freshwater pools, streams, and ponds throughout the Central California Coast Range and isolated portions of the western slope of the Sierra Nevada (Fellers 2005). Its preferred breeding habitat consists of deep perennial pools with emergent vegetation for attaching egg clusters (Fellers 2005), as well as shallow benches to act as nurseries for juveniles (Jennings and Hayes 1994). Non-breeding frogs may be found adjacent to streams and ponds in grasslands and woodlands, and may travel over 2 mi from their breeding locations across a variety of upland habitats to suitable nonbreeding habitats (Bulger et al. 2003, Fellers and Kleeman 2007). However, the distance moved is highly site-dependent, as influenced by the local landscape (Fellers and Kleeman 2007).

Congress Springs Creek and its drainages are relatively high gradient streams, and emergent and low overhanging vegetation is generally absent. Thus, red-legged frogs are not expected to breed in the study area. Nevertheless, there is a recent record from Saratoga Creek, approximately 0.3 mi from the study area (CNDDB 2019), and potentially suitable breeding habitat has been identified in Quarry Park at the northern end of the project alignment (i.e., within dispersal distance) (City of Saratoga 2014). Thus, because the streams and riparian habitat in the study area provide ostensibly suitable foraging and dispersal habitat, non-breeding individuals may occur in the study area.

California Species of Special Concern

California Giant Salamander (*Dicamptodon ensatus*). Federal Listing Status: None; State Listing Status: Species of Special Concern. California giant salamanders are endemic to California. They range from Mendocino County south through the San Francisco Bay Area to Santa Cruz County, but do not occur in the East Bay (Kucera 1997). California giant salamanders occur in moist forests and riparian areas near clear, cold streams, seeps and ponds (Stebbins and McGinnis 2012). Breeding takes place primarily from March through May, but may also occur in the fall. This species prefers to breed in cold, clear running water but may also breed

in lakes and ponds. California giant salamanders do not occur on the Santa Clara Valley floor, but are found throughout the Santa Cruz Mountains, including multiple records from the vicinity of the study area (CNDDB 2019). California giant salamanders likely occur in small numbers in the study area, particularly along the creeks and streams.

Santa Cruz Black Salamander (*Aneides flavipunctatus niger*). **Federal status: None; State status: Species of Special Concern.** The Santa Cruz black salamander is endemic to California and is found in moist streamside habitats in woodlands and forests in the Santa Cruz Mountains in western Santa Clara, northern Santa Cruz, and southernmost San Mateo Counties. This subspecies is mostly terrestrial, staying underground during dry periods and foraging for small invertebrates aboveground at night during wet weather. Females lay eggs in July or August (Petranka 1998 as cited in Thomson et al. 2016) in cavities below ground and may stay with the eggs until they hatch. Santa Cruz black salamanders do not occur on the Santa Clara Valley floor, but are found throughout the Santa Cruz Mountains, including multiple records from the vicinity of the study area, including a historical record from Congress Springs Canyon (CNDDB 2019). Santa Cruz black salamanders likely occur in small numbers in the study area, particularly along the creeks and streams.

Western Pond Turtle (*Actinemys marmorata*). **Federal status: None; State status: Species of Special Concern.** The western pond turtle occurs in ponds, streams, and other wetland habitats in the Pacific slope drainages of California (Bury and Germano 2008). Ponds or slack-water pools with suitable basking sites (such as logs) are an important habitat component for this species, and western pond turtles do not occur commonly along high-gradient streams. Females lay eggs in upland habitats, in clay or silty soils in unshaded (often south-facing) areas (Jennings and Hayes 1994). Juveniles occur in shallow aquatic habitats (often creeks) with emergent vegetation and ample invertebrate prey. Nesting habitat is typically found within 600 ft of aquatic habitat (Jennings and Hayes 1994), but if no suitable nesting habitat can be found close by, adults may travel overland considerable distances to nest.

Western pond turtles have been recorded recently along a number of streams and rivers in Santa Clara County, and within a number of ponds and lakes, throughout much of the County away from northern, tidal stream reaches (H. T. Harvey & Associates 1999, CNDDB 2019). All perennial creeks, many intermittent creeks, and most ponds that are not completely isolated by development have some potential to support this species. However, the cumulative stressors of urbanization, including release of non-native turtles, predation and harassment by pets and non-native mammals, capture by humans, degradation of water quality, loss of upland nesting habitat because of development, and the construction of barriers between creeks and nesting areas have reduced western pond turtle populations, and few areas exist where the species can be considered common. In particular, the scarcity of suitable expanses of nesting habitat makes the maintenance of viable populations unlikely along reaches of many creeks in the County. There are no historical or extant records of the western pond turtle from the study area, but the study area is connected to other potentially suitable habitat via Congress Springs Creek and Saratoga Creek, and because western pond turtles are long-lived and are known to travel overland, they can potentially occur in the study area. However, streams within the study area provide only

marginal quality habitat due to the paucity of open water and basking sites. Therefore, the species is not expected to use the study area for nesting or to occur in large numbers.

Olive-sided Flycatcher (*Contopus cooperi*). **Federal status: None; State status: Species of Special Concern (Nesting).** Olive-sided flycatchers are associated with coniferous forest habitats and breed in mature forests with open canopies, along forest edges in more densely vegetated areas, in recently burned forest habitats, and in selectively harvested landscapes (Altman and Sallabanks 2000; Robertson and Hutto 2007). Olive-sided flycatchers nest in tall trees, building an open cup nest away from the main trunk in the middle to upper reaches of the tree (Widdowson 2008), and individuals exhibit high site fidelity. This species makes one of the longest annual migrations of any songbird, from the Andes Mountains of South America to boreal breeding grounds in the United States and Canada, arriving at their breeding territories beginning in mid-May and remaining until late July.

This species breeds widely in the Santa Cruz Mountains, and more sparingly in the Diablo Range, but it does not breed on the Santa Clara Valley floor. Likely, few pairs nest at sites below 1,000 ft in elevation, but confirmed breeding has occurred at elevations as low as 400 ft (Bousman 2007). The riparian and mixed evergreen habitats in the study area provide suitable nesting habitat for this species. The species is known to nest in similar habitats in the vicinity (Bousman 2007) and is often detected in nearby parks during the nesting season (Cornell Lab of Ornithology 2019).

San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*). **Federal status: None; State status: Species of Special Concern.** The San Francisco dusky-footed woodrat occurs in a variety of woodland and scrub habitats throughout the South Bay and the adjacent Central Coast Range, south to the Pajaro River in Monterey County (Hall 1981, Zeiner et al. 1990). They prefer riparian and oak woodland forests with dense understory cover, or thick chaparral habitat (Lee and Tietje 2005). Dusky-footed woodrats build large, complex nests of sticks and other woody debris, which may be maintained by a series of occupants for several years (Carraway and Verts 1991). Woodrats also are very adept at making use of human-made structures, and can nest in electrical boxes, pipes, wooden pallets, and even portable storage containers. Woodrat nest densities increase with canopy density and with the presence of poison oak (Carraway and Verts 1991). Although the San Francisco dusky-footed woodrat is described as a generalist omnivore, individuals may specialize on local plants that are available for forage (Haynie et al. 2007). The breeding season for dusky-footed woodrat begins in February and sometimes continues through September, with females bearing a single brood of one to four young per year (Carraway and Verts 1991).

Woodlands and scrub habitats in the study area provide suitable nesting and foraging habitat for this species, and this species can be abundant in suitable habitat; numerous woodrat nests were observed in the study area during the reconnaissance survey.

Pallid Bat (*Antrozous pallidus*). **Federal Listing Status: None; State Listing Status: Species of Special Concern.** Pallid bats are most commonly found in oak savannah and in open dry habitats with rocky areas,

trees, buildings, or bridge structures that are used for roosting (Zeiner et al. 1990; Ferguson and Azerrad 2004). Coastal colonies commonly roost in deep crevices in rocky outcroppings, in buildings, under bridges, and in the crevices, hollows, and exfoliating bark of trees. Night roosts often occur in open buildings, porches, garages, highway bridges, and mines. Colonies can range in size from a few individuals to over a hundred (Barbour and Davis 1969), and they usually consist of at least 20 individuals (Wilson and Ruff 1999). Pallid bats typically winter in canyon bottoms and riparian areas. After mating during the late fall and winter, females leave to form maternity colonies, often on ridge tops or other warmer locales (Johnston et al. 2006). Pallid bat roosts are very susceptible to human disturbance. The pallid bat occurs sporadically throughout open areas and along roads of the Pacific coastal regions, including the Santa Cruz Mountains. This species has been extirpated as a breeder from urban areas close to the Bay, but may still breed in the Santa Cruz Mountains. Potentially suitable roosting habitat is present in the study area in the form of small to moderate cavities in trees.

1113869.1

Attachment B
Engineering Geologic and Geotechnical Study

SARATOGA-TO-SANBORN TRAIL ENGINEERING GEOLOGIC AND GEOTECHNICAL INVESTIGATION

City of Saratoga, CA

May 2019



Project: SAR-SAR2SAN-767

Prepared for:
Emma Burkhalter
Assistant Engineer
City of Saratoga – Public Works
12777 Fruitvale Ave
Saratoga, CA 95070



TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY

1002 Columbia Street, Santa Cruz, CA 95060 • Tel (831) 425-5832 • Fax: (831) 425-5830 e-mail: timbest@coastgeo.com



TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY

1002 Columbia Street, Santa Cruz, CA 95060
(831) 425-5832 • Fax: (831) 425-5830 • e-mail: timbest@coastgeo.com

May 15, 2019

Emma Burkhalter
Assistant Engineer
City of Saratoga – Public Works
12777 Fruitvale Ave
Saratoga, CA 95070

JOB: SAR-SAR2SAN-767

**REFERENCE: ENGINEERING GEOLOGIC and GEOTECHNICAL INVESTIGATION:
SARATOGA TO SANBORN TRAIL CONNECTION**

Dear Ms. Burkhalter:

This report presents the results of our engineering geologic and geotechnical investigation of the proposed Saratoga to Sanborn Trail, located within the City of Saratoga, Santa Clara County, California.

The project proposes to develop 3 miles of new recreational trail to connect Saratoga Quarry Park with Sanborn County Park. Approximately 2.7 miles of the project will be new trail construction with and additional 0.3 miles routed along an old unused and overgrown road. Four clear span trail bridges are proposed to cross Congress Springs Creek and three of its tributaries.

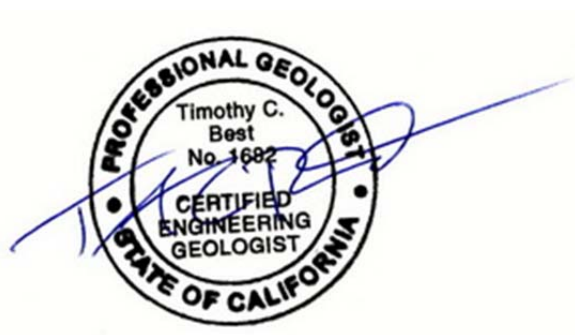
This study evaluates the geologic and geotechnical conditions and hazards at the site and assesses the implications of the proposed project with respect to erosion and hillslope stability. The report is an update of our earlier 2015 and 2017 draft feasibility assessments to incorporate additional information and modification to the trail alignment. Included in this report and accompanying plan documents are recommendations for trail construction to mitigate the potential geologic risks to the extent feasible for the intended low-intensity recreational use of the trail.

The project is located in an area of steep mountainous terrain inherently subject to several geologic hazards, including landsliding, erosion, and severe seismic shaking. Portions of the trail will need to cross steep and potentially unstable ground that cannot be reasonably avoided. Portions of the trail may be subject to ground failure or damage in the event of a large storm or seismic event requiring periodic repairs, or in a worst case scenario, trail reconstruction. This level of stability is similar to that of other remote recreational trails found in similar terrain. Incorporating the recommendations outlined in this report and in the plan documents will mitigate this risk to a less than significant for recreational trail use while at the same time minimizing environmental impacts. The trail and trail structures will require routine inspection, maintenance and repair as needed to abate the risks from geologic hazards.

While damage to the trail and trail elements may occur in the event of an adverse seismic or climatic event, the risk to users from the geologic hazards is expected to be low due to the infrequent occurrence of instability and to the short duration and low frequency of trail use. Therefore the users of the trail, if exercising reasonable common sense, are not expected to be subject to risks from naturally occurring geologic hazards beyond a reasonable level of risk consistent with recreational trail use in remote settings, provided that the trail and trail structures are routinely inspected, maintained and repaired as needed.

Please contact us if you have any questions regarding the contents of this report.

Very truly yours,



Timothy C. Best
Certified Engineering Geologist #1682

TABLE OF CONTENTS

TABLE OF CONTENTS	i
INTRODUCTION	1
PROJECT DESCRIPTION	1
PROJECT OBJECTIVES AND REQUIREMENTS	1
SCOPE OF SERVICES	2
PHYSICAL SETTING	2
GEOGRAPHIC SETTING	2
PHYSIOGRAPHY	2
CLIMATE	4
VEGETATION	4
REGIONAL GEOLOGIC SETTING	4
GEOLOGY AND SOILS	4
REGIONAL FAULTS AND SEISMICITY	6
LANDSLIDES AND SLOPE STABILITY	8
DRAINAGE AND EROSION	9
SITE OBSERVATIONS	10
TRAIL ALIGNMENT OBSERVATIONS	10
STA 0 – 45: SARATOGA QUARRY TRAIL HEAD	10
STA 155 – 165: DRY RAVINE	10
STA 865 – 1030: DRAINAGE FROM QUARRY ROAD	12
STA 1230: BRIDGE 1	12
STA 2565 – 2630: STEEP SLOPES	12
STA 3850 – 4050: STEEP SLOPES	12
STA 4480: BRIDGE 2	13
STA 4960 – 5800: STEEP AND POTENTIALLY UNSTABLE SLOPES	13
STA 5865 – 6045: STEEP SLOPES	14
STA 4960 - 10775: DEEP-SEATED LANDSLIDE AND TRAIL SWITCHBACKS	14
STA 11400: BRIDGE 3	15
STA 11705 – 11785: STEEP SLOPES	15
STA 12760: BRIDGE 4	16
STA 14290 - 16005: ROAD TO TRAIL CONVERSION	16
TRAIL BRIDGE SITE OBSERVATIONS	16
BRIDGE 1: TRIBUTARY	16
BRIDGE 2: CONGRESS SPRINGS CREEK	21
BRIDGE 3: TRIBUTARY	26
BRIDGE 4: TRIBUTARY	30
SUMMARY of GEOLOGIC HAZARDS AND CONSTRAINTS	31
STEEP UNSTABLE SIDESLOPES	31
DEEP-SEATED LANDSLIDING	32
TRAIL EROSION	32
GROUNDWATER	32
WATERCOURSE CROSSINGS	32
BRIDGE 1:	33
BRIDGE 2:	33

BRIDGE 3:	34
BRIDGE 4.....	34
SEISMIC SHAKING	34
SWITCHBACKS	34
CONCLUSIONS	35
DESIGN RECOMMENDATIONS.....	36
TRAIL DESIGN	36
DRAINAGE AND EROSION CONTROL	37
BRIDGE DESIGN	38
BRIDGE 1.....	38
BRIDGE 2.....	38
BRIDGE 3.....	38
BRIDGE 5.....	38
FOUNDATION RECOMMENDATIONS AND LATERAL PRESSURES	39
OTHER.....	39
REFERENCES	40
INVESTIGATIVE LIMITATIONS	41
APPENDIX A: BORING LOGS AND GEOTECHNICAL LAB WORK.....	1
APPENDIX B: PRELIMINARY PLAN DOCUMENTS	1

INTRODUCTION

This report presents the findings of our engineering geologic and geotechnical investigation of the proposed Saratoga - Sanborn Trail, located within the City of Saratoga, Santa Clara County, California (Figure 1).

This report is an update of our earlier 2015 feasibility assessment of the proposed trail alignment and our draft 2017 feasibility assessment of the proposed bridge crossings to incorporate additional information and modification to the trail alignment. Conclusions and recommendations regarding site grading, drainage, and foundations are presented within this report, accompanying appendices and plan documents.

PROJECT DESCRIPTION

The project proposes to develop 3 miles of new 4- to 5-foot wide recreational trail that switchbacks up moderate to steep slopes to connect Saratoga Quarry Park with Sanborn County Park (Figure 1). Approximately 2.7 miles of trail will be new construction with 0.3 miles routed along an existing unused and overgrown road. New trail construction will require 18 switchbacks and approximately 955 feet of low (1 to 2.5 ft high) retaining walls. The trail will average a 5% to 12% sustained grade with short segments of up to 15%. The trail tread is to be unsurfaced and drained by frequent drain dips.

The project includes 4 clear span bridges

- Bridge 1 is a 35 foot long x 6 foot wide steel stringer bridge with wood deck and railing to span a small intermittent watercourse.
- Bridge 2 is a 70 foot long x 6 foot wide steel or fiberglass truss bridge to span Congress Springs Creek
- Bridge 3 is a 50 foot long x 6 foot wide steel stringer bridge with wood deck and railing to span a small intermittent watercourse.
- Bridge 4 is a 20 foot long x 6 foot wide steel stringer or glulam bridge with wood deck and railing to span a very small ephemeral watercourse.

Preliminary plan documents are found in Appendix B.

PROJECT OBJECTIVES AND REQUIREMENTS

The design objectives as stated in the CITY's August 7, 2019 request for proposal and discussed with the City include:

- All trails should be designed in accordance with the Midpeninsula Regional Open Space District's Trail Construction and Maintenance Guidelines and the Uniform Interjurisdictional Trail Design, Use, and Management Guidelines to the extent feasible.
- New trail shall be laid out to conform to natural terrain to create an alignment. The alignment should avoid long straight reaches. The alignment should incorporate natural terrain features to form required reverse grades to the extent feasible.
- Trail shall be constructed at a maximum 8 to 12% sustained grade. Short segments of up to 15% gradient may be allowed.

- Trail shall be constructed at a 4 to 5 foot width. The outer trail edge may need to be supported on a low retaining wall, as site conditions dictate.
- Trail shall incorporate frequent reverse grade dips.
- Incorporate climbing turns at switchbacks to the extent feasible.
- Recognize that a trail built across steep landslide prone areas may only be temporary, and may need to be rebuilt after slippage of a slide. Design shall minimize maintained to the extent feasible.
- All crossings shall have clear span bridges with abutments located outside the 100-year flood elevation.

SCOPE OF SERVICES

This investigation was undertaken at the request of the City of Saratoga (CITY) to evaluate the geologic, geotechnical and hydrologic conditions at the project site, and to develop recommendations and design parameters to construct the trail. This study updates our earlier May 2015 study and May 2017 studies which evaluated the feasibility of the both the proposed trail and stream crossings, respectively.

This investigation was undertaken in association with civil and hydraulic engineers Waterways Consulting (WW), geotechnical engineers Haro Kasunich and Associates, Inc. (HKA), and landscape architects Placeworks (PW). The full scope of services for this investigation is outlined in our agreement dated October 11, 2018 and in the CITY's request for proposals dated August 7, 2018.

Work performed during this investigation included:

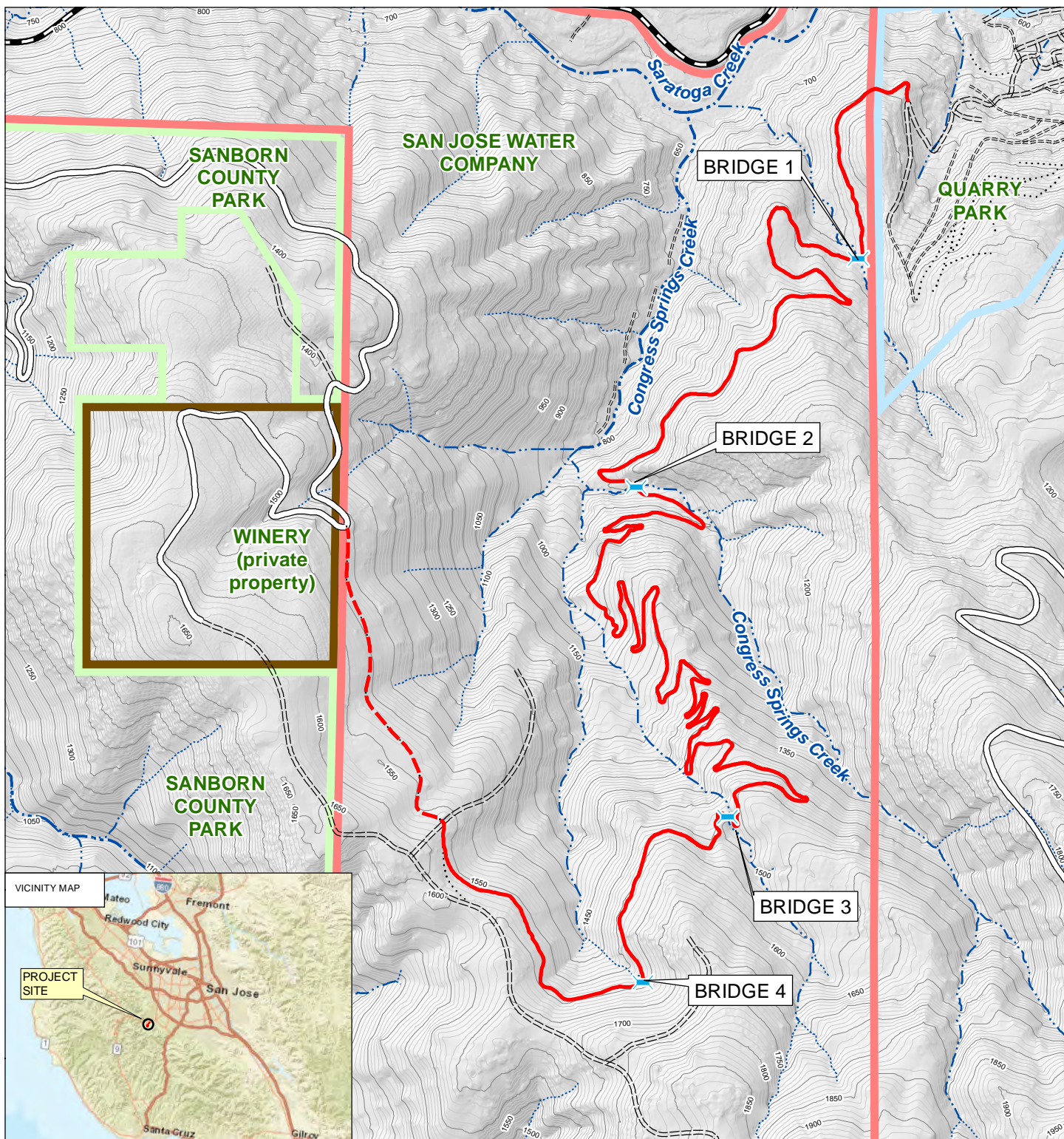
- Review of published geologic literature (see reference section of this report);
- Review of LiDAR-derived bare earth digital elevation model (DEM);
- Geologic and geomorphic mapping of the trail alignment;
- Topographic mapping of three bridge sites
- Excavation of several hand dug test pits and ten hand auger borings;
- Geotechnical review of proposed bridge and select retaining walls sites
- Data analysis
- Discussions with City staff, Midpeninsula Regional Open Space District Staff, Santa Clara County Parks Staff, Placeworks, and HT Harvey (biological consultants);
- Preparation of this report and accompanying construction documents.

PHYSICAL SETTING

GEOGRAPHIC SETTING

PHYSIOGRAPHY

The project area is located on the south side of Saratoga Creek and Highway 9, within the lower Congress Springs Creek drainage (Figure 1). Congress Springs Creek is a tributary to Saratoga Creek.



ROADS

- Highway
- Paved
- Dirt

STREAMS

- Ephemeral
- Intermittent
- Perennial

PARCEL

- SAN JOSE WATER COMPANY
- QUARRY PARK
- SANBORN PARK
- WINERY (private property)

TRAIL CONSTRUCTION

- New
- Road to trail conversion
- Proposed Bridge



0 500 1,000
Feet



TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY
1002 Columbia Street, Santa Cruz, CA 95060
(831) 425 5832 (831) 425 5830 (fax)

LOCATION MAP

SARATOGA-TO-SANBORN TRAIL PROJECT
City of Saratoga

FIGURE 1
Job: SAR-SAR2SAN-767
Date: 5/15/2019

The area is characterized by steep mountainous terrain dissected by narrow, steep sided V-shaped ravines and stream valleys. Natural slopes range from less than 20% gradient along gently sloping ridgetops and midslope benches to more than 80% gradient along local steep streamside slopes and steep headwall swales. Broad alluvial sediments are found along the valley bottoms of Saratoga Creeks and lower Congress Springs Creek. Certain sections of tributary drainage channels appear partially filled by debris-flow/landslide deposits (colluvium). These deposits often take on the appearance of a flat-bottomed section of an otherwise “V-shaped” valley. Elevations range from 620 feet above sea level along Saratoga Creek to over 2,000 feet along the ridge top.

The hillsides are underlain by a series of large-scale deep-seated bedrock landslides, several of which appear periodically active. The steep slopes that characterize much of the area are also subject to shallow landslide processes. Small debris fans are found at the mouths of many of the steep drainages.

CLIMATE

The climate is Mediterranean with high-intensity rainfall in the winter and warm, dry summers with coastal fog. Rain is the dominant form of precipitation with most of the yearly rainfall coming between the months of November through March. Mean annual rainfall is 40.6 inches. The plan area is subject to very high rainfall intensities that can exceed 5.8 inches per hour for a 10 minute duration event with 100 year recurrence interval (USGS and CGS, 2006).

VEGETATION

The vegetation primarily consists of oak woodlands and chaparral with coniferous forest found locally along the valley bottoms of the larger watercourses.

REGIONAL GEOLOGIC SETTING

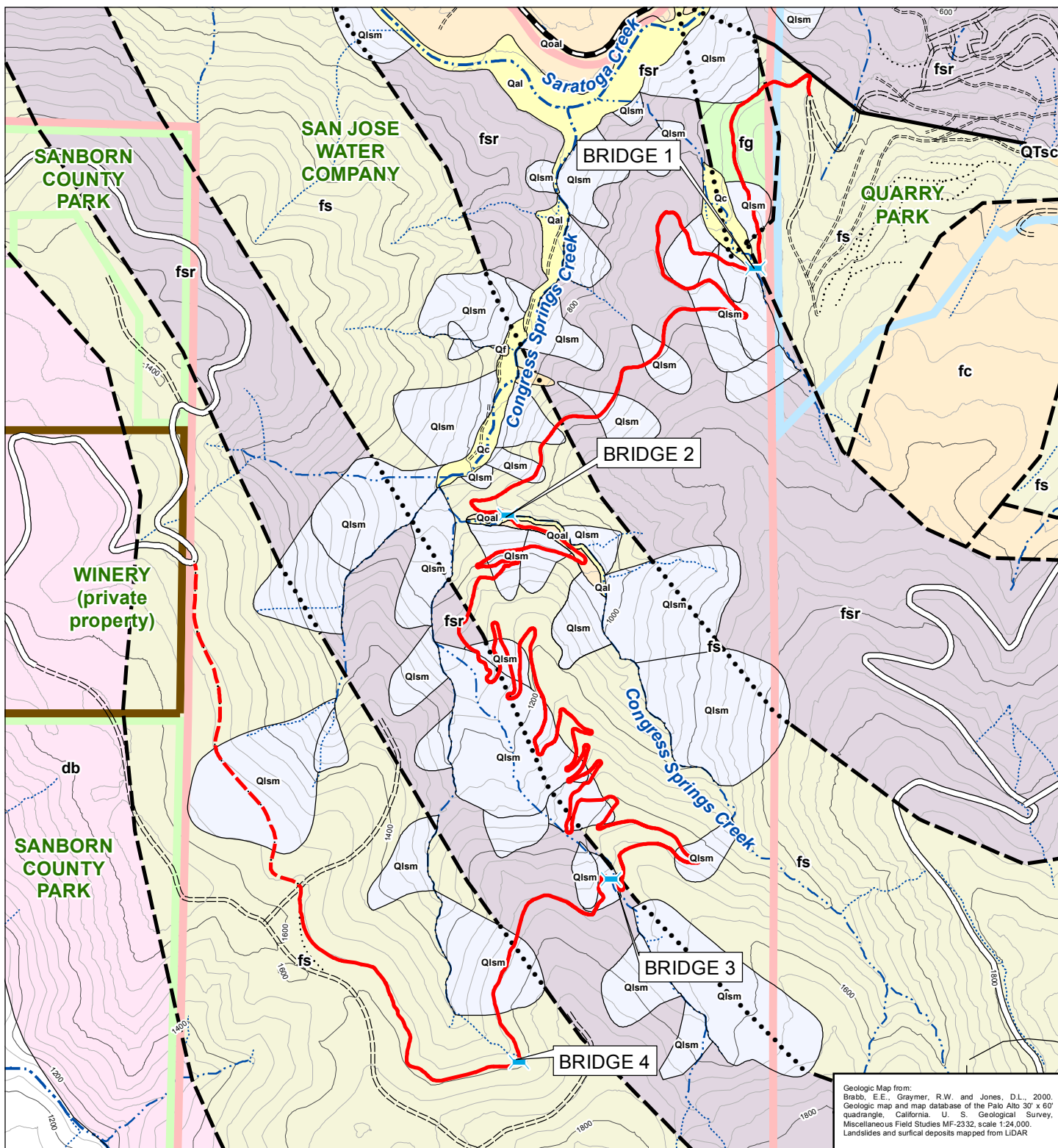
The plan area is situated on the western flank of the Coast Range Physiographic Province of Northwest California, a series of coastal mountain chains paralleling the pronounced northwest-southeast structural grain of northwest California. The San Andreas Fault Zone is the major geologic feature of the region, and is located about 1.5 miles northeast from the site.

GEOLOGY AND SOILS

Bedrock Geology

The property is located on the south side of the Berrocal Fault Zone which is a late Quaternary southwest-dipping reverse fault zone that forms a part of what McLaughlin et al. (1996) refer to as the Southwestern Santa Clara Valley thrust belt. At this location the fault thrusts bedrock of the Mesozoic Franciscan Complex to the south over sediment of the Pliocene-Pleistocene Santa Clara Formation to the north (Brabb et al., 2000; WCA, 1977) (Figure 2).

The project area is mapped as entirely underlain by bedrock of the Franciscan Complex (Figure 2). Franciscan rocks are described by WCA (1977) and Brabb et al. (2000) as predominantly massive to thick bedded fractured greywacke sandstone with interbedded siltstone and shale (fs), and pervasively sheared rock (fsr).



CONTACTS

- contact
- fault, certain
- fault, approx. located
- fault, concealed

PARCEL

- SAN JOSE WATER COMPANY
- QUARRY PARK
- SANBORN PARK
- WINERY (private property)

GEOLOGY UNITS

- Qc: Colluvium
- Qal: Alluvium
- Qf: Debris fan
- Qoal: Old alluvium
- Qlsm: Landslide mass
- QTsc: Santa Clara Formation
- fs: Franciscan sandstone
- fg: Franciscan greenstone
- fc: Franciscan chert
- fsr: Franciscan sheared rock
- db: Diabase and gabbro

TRAIL CONSTRUCTION

- New
- Road to Trail Conversion
- Proposed Bridge



0 500 1,000 Feet



TIMOTHY C. BEST, CEG
 ENGINEERING GEOLOGY AND HYDROLOGY
 1002 Columbia Street, Santa Cruz, CA 95060
 (831) 425 5832 (831) 425 5830 (fax)

GEOLOGIC MAP
 SARATOGA-TO-SANBORN TRAIL PROJECT
 City of Saratoga

FIGURE 2

Job: SAR-SAR2SAN-767
 Date: 5/15/2019

During our site reconnaissance, we observed Franciscan sandstone (fs) outcrops generally consistent with the mapping of Brabb et al. (2000). Where exposed the rock is characterized as fine- to coarse-grained, moderately hard, strong and closely to moderately fractured. Franciscan sheared rock

The Franciscan sheared rock (fsr) is a tectonic mixture of sheared shale and sandstone). This rock is typically more deeply weathered than the sandstone and therefore is not well exposed along the ground surface.

Soils and Surficial Sediments

Colluvium and Soils: Mantling bedrock is a thin to thick veneer of weathered bedrock, late Pleistocene to Holocene age colluvium and soils. Colluvial deposits are found nearly everywhere across the hillside, however are thickest toward the axes of swales and toe slopes. The steeper slopes tend to be underlain by more competent bedrock at shallower depth.

Colluvial deposits and surficial are variable depending on the underlying bedrock materials. In areas underlain by Franciscan sandstone the surficial soils are relatively thin and typically comprised of moderately well drained, loose to medium dense gravel and sand with trace silt and clay fractions; in areas underlain by Franciscan sheared rock the surficial soils are a more deeply weathered sandy silt to silty clay with local angular clasts of fractured sandstone. A seasonal perched water table may develop on top of the more competent bedrock. In general, the geologic materials are generally suitable for trail construction; however, may be locally susceptible to erosion where runoff is concentrated and to instability where slopes are steep.

Alluvium: Alluvium and alluvial terrace deposits are found along Congress Springs Creek. These materials generally consist of unconsolidated granular deposits of sand and gravel with a low percentage of fines. Alluvial deposits are generally suitable for trail construction, however are susceptible to erosion where runoff is concentrated and subject to undercutting where adjacent to Congress Springs Creek.

Landslide Deposits: Landslide deposits have been identified in isolated areas on the subject property. These materials generally consist of unconsolidated displaced surficial soil and bedrock materials. They include sediment derived from shallow rapid debris flows and relatively intact blocks of bedrock incorporated in deeper-seated landslides. The suitability of these deposits for trail construction is variable and generally a function of slope steepness, soil type, and landslide hazard. Where slopes are steep and the slide mass is found to be potentially active there is the potential for future slope instability to damage trail requiring trail repairs. The trail can also be impacted by landslide debris originating from upslope source areas.

REGIONAL FAULTS AND SEISMICITY

The subject property is located within a highly seismically-active region of California. A broad system of inter-related northwest-southeast trending strike-slip faults represents a segment of the boundary between the Pacific and North American crustal plates. For approximately the past 15 million years (mid-Miocene) the Pacific plate has been slipping northwestward with respect to the North American plate (Atwater, 1970; Graham and Dickinson, 1978). The majority of movement has been taken up by

the San Andreas Fault itself; however, there are other faults within this broad system that have also experienced movement at one time or another.

San Andreas Fault: The San Andreas Fault is an active, northwest-trending right lateral strike slip fault zone and represents the major seismic hazard in northern California. The main trace of the fault trends northeast-southwest and extends over 700 miles from the Gulf of California through the Coast Range to Point Arena, where the fault extends offshore. The San Andreas Fault was responsible for the 1906 San Francisco earthquake (Mw 7.9) and the 1989 Loma Prieta earthquake (Mw 7.0).

The San Andreas Fault is located about 1.5 miles northwest of the project site. This segment of the fault has been assigned a slip rate that results in a Mw 7.3 earthquake with a recurrence interval of 400 years (WGOCEP, 1996).

Berrocal Fault Zone: The Berrocal Fault Zone, which transects the property, is a Late Quaternary to possibly Holocene active, poorly constrained reverse to oblique slip fault zone located along the base of the eastern flank of the northeastern Santa Cruz Mountains. It is part of the Southwestern Santa Clara Valley thrust belt that also includes the Sargent, Monta Vista and Shannon Faults (McLaughlin et al., 1996).

Most researchers consider the Santa Clara Valley thrust belt to be potentially active, based upon the geomorphology along the fault zone, as well as loose knit evidence of syntectonic movement during the 1989 Loma Prieta earthquake (Bryant, 2000).

Fault Rupture

The project site is not in an Alquist-Priolo Earthquake Fault Zone and there are no mapped active faults transecting the bridge sites. Based on the foregoing the potential risk of fault rupture is low.

Seismic Shaking

The project site is in a seismically active area in close proximity to the San Andreas Fault Zone, a major potential source of severe seismic shaking. High ground accelerations would be expected during a large earthquake on this fault or other nearby faults.

Site soil conditions are important in determining seismic design parameters. The NEHRP Recommended Seismic Provisions uses the concept of Site Class to categorize common soil conditions into broad classes to which typical ground motion attenuation and amplification effects are assigned. Site Class is determined based on the average properties of the soil within 100 feet of the ground surface.

According to the soil type and earthquake shaking hazard map for the San Francisco Bay Area (USGS, 2017a), which illustrates a rough estimate of surface geology, the project site soil is characterized as soil type A (the most stable classification of rock or soil) or B (rock or soil less stable than type A). Soil types A and B are not expected to contribute greatly to shaking amplification in the event of an earthquake.

The U.S. Geological Survey (2017b) have developed U.S. Seismic Design Maps that depict seismic design parameters based on a probabilistic seismic hazard assessment. The Beta version of the U.S. Seismic Design Maps (USGS, 2017b) provides seismic parameter values from the 2015 National Earthquake Hazards Reduction Program (NEHRP) Recommended Seismic Provisions for New Buildings and Other

Structures. The (USGS, 2017b) reports that seismic design parameter values are proposed for use in future editions of major U.S. building codes (International Building Code, ASCE 7 Standard).

The Mean Peak Ground Acceleration (PGA) on Site Class B soils (rock) at the subject site is reported by the USGS (2017b) to be 1.02 g.

We recommend that the proposed bridge structures be designed for seismic shaking in accordance with the latest version of the California Building Code (CBC). Conformance to these criteria, however, does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a very large earthquake occurs. The primary goal of seismic design is to protect life, and not necessarily to avoid structural damage, since achieving such design may be economically and environmentally prohibitive

Liquefaction

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary loss of shear strength due to pore pressure buildup from the cyclic shear stress associated with earthquakes. Primary factors that trigger liquefaction are: strong ground shaking, relatively clean loose granular soils, and saturated soil conditions.

Lateral spreading is lateral ground movement, with some vertical component, as a result of liquefaction. The soil literally rides on top of the liquefied layer. Lateral spreading can occur on relatively flat sites with slopes less than two percent under certain circumstances. Lateral spreading can cause ground cracking and settlement.

We reviewed the Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region (Witter et al., 2006). These maps do not depict Quaternary age deposits at the project site and report the liquefaction hazard to be low; the lateral spreading hazard is thus low to nonexistent.

LANDSLIDES AND SLOPE STABILITY

Landslides are common throughout the central Santa Cruz Mountains and are one of the dominant geologic forces shaping the modern landscape. Oversteepened slopes from tectonic uplift and rapid downcutting of streams, in concert with high intensity rainfall and intense seismic shaking have contributed to the high occurrence of shallow and deep-seated landslides within the project area.

Deep-Seated Landslide

Review of bare earth LiDAR imagery reveal that portions of the property are underlain by a series of relatively slow moving large-scale deep-seated translational block slides and earthflows (Figure 2). These failures are characterized by benched topography and are formed by translational movement of a relatively intact mass with a failure plane that extends below the colluvial layer into the underlying bedrock. The slides typically consist of several smaller secondary blocks that coalesce together to form a larger landslide complex. Deep-seated landslides tend to fail incrementally in response to intense ground shaking from earthquakes on nearby faults (such as the 1906 San Francisco earthquake or 1989 Loma Prieta earthquake) and/or from prolonged heavy rainfall.

The landslides in the project area demonstrate varying levels of activity. Many appear weathered and subdued and are forested with straight-standing second growth conifers and old growth stumps. These slides correspond to the "dormant-young" morphological age classification of Keaton and DeGraff (1996). Other slides show signs of relatively recent small-scale incipient movement based on "soft terrain features", localized discontinuous scarps, leaning trees, and juvenile drainage patterns. Overall, the deep-seated landslide rate appears to be slow and episodic. We did not observe any clear evidence of recent activity following the 2017 and 2019 storms.

Based on our field observations of slide morphology, we interpret the slides to be potentially active with slope displacements possible in the event of a large magnitude earthquake or large storms. In our opinion, future slide movement would most likely result in small scale ground displacements on the order of a few inches to several feet. Better quantification of ground displacement would require a detailed geotechnical investigation incorporating subsurface exploration (which would be difficult if not impossible to undertake due to the remote nature of the site and lack of access for drill rigs), laboratory testing, slope stability modeling and Newmark analysis; all of which is outside the scope of this study.

Shallow Landslides

The geomorphology of the hillslopes surrounding the project area is consistent with infrequent shallow landslide processes. Shallow landslides are classified as debris slides, debris flows and channel bank failures and are characterized by rapid, shallow (generally less than 7 feet thick) downslope movement of surficial soil, colluvium, and weathered bedrock. Natural shallow landslides are a function of slope gradient, soil strength and depth, groundwater and vegetation. Most natural shallow slides are triggered by elevated porewater pressures resulting from high intensity and/or long duration rainfall, or from being undercut by stream bank erosion. Future shallow landslides will occur within the area during adverse climatic or seismic conditions regardless of landuse activities.

During our field review we observed equivocal evidence of several shallow debris slide scars within the project area. Most of the slides appear old and were not apparent in the historic aerial photographs. It should be understood, however, that small landslides that occurred underneath tree cover may be obscured in the aerial photographs and imagery and therefore may not have been identified. The majority of observed shallow slides are found along the banks of deeply incised watercourse and to a lesser extent on local steep slopes exceeding 70% gradient (Figure 3), and these slopes are generally found to have a moderate to high potential for debris flows and debris slides.

Although no recent or historic landslides were observed along the proposed trail alignment, site geomorphology, including the existence of locally steep slopes and presence of scattered old debris slide scars indicates that debris slides and debris flows are potential geologic hazards along portions of the proposed trail.

DRAINAGE AND EROSION

Surface drainage is primarily by sheetwash with concentrated ephemeral overland flow occurring within the three watercourses. Groundwater was not observed during my field review. A seasonal perched groundwater table could develop within the colluvial soils capping bedrock.

Soils are primarily a gravelly loam that based on field observations tend to be moderately well drained with a moderate erosion potential. Review of nearby unsurfaced roads and trails crossing similar earth materials reveal low trail erosion where the trail grade is less than 15% and runoff is adequately controlled.

SITE OBSERVATIONS

TRAIL ALIGNMENT OBSERVATIONS

The following are pertinent field observations along the proposed trail exclusive of the trail bridges. See Figure 3 for a site map. Segments of trail not described do not have significant geologic constraints.

STA 0 – 45: SARATOGA QUARRY TRAIL HEAD

Site Conditions

Proposed trail begins on Saratoga Quarry property at an existing road switchback with a small turn out. At this location, the quarry road is drained by a shallow inboard ditch past the trail entrance and then down a small ravine. The road ditch is relatively shallow with local ponding of water. The road cut is about 5 feet high and inclined at steeper than 1:1. Earth materials are clayey sand with some gravel.

The segment of the old quarry road beyond this location is steep (greater than 20% grade) and poorly drained resulting in road runoff to concentrate for a long distance. This has resulted in some erosion of the road with the deposition of sediment near the location of the proposed trail head.

Recommendations

The new trail will need to ramp up over the road cut a 3 foot deep on a fill bench for a distance of about 30 feet before reaching gentler ground. An 18 inch diameter by 35 foot long ditch relief culvert will need to be installed to convey ditch runoff past the past the swale. The upslope inboard ditch should also be cleaned. The City should consider improving road drainage along the quarry road to minimize the amount of runoff that can be concentrated. Ongoing maintenance of the road ditch and culvert will be required.

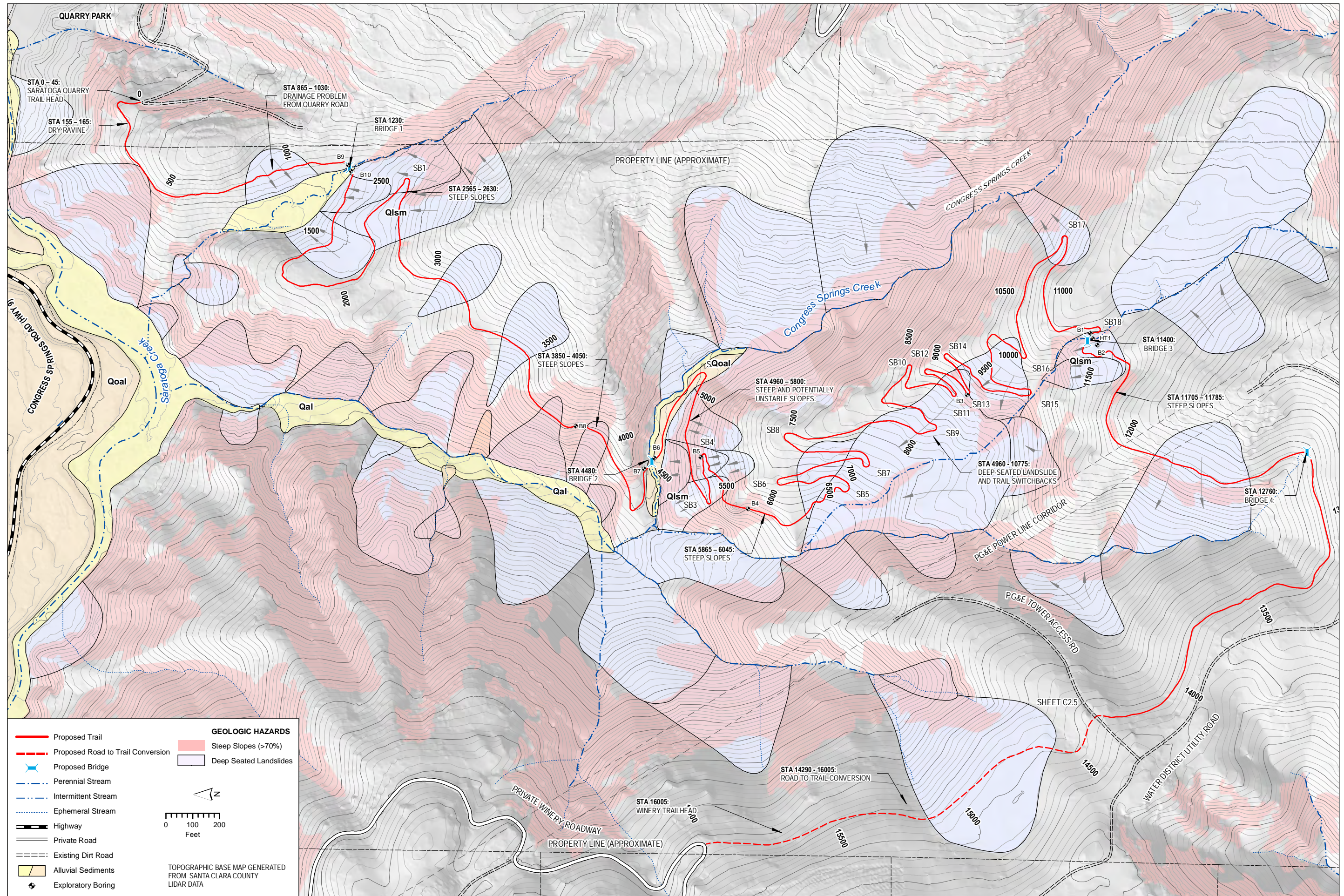
STA 155 – 165: DRY RAVINE

Site Conditions

The proposed trail crosses an incised dry ravine associated with old quarry operations. The ravine is about 10 feet wide and roughly 5 to 6 feet deep with channel gradient of about 45%. Earth materials are primarily sand and gravel originating from the old quarry operations. A small bench is found a short distance down slope. We observed no evidence of overland flow and interpret the ravine to be a relic feature.

Recommendations

Install a new 18" X 25' HDPE culvert and build up the road prism on approximately 15 cy of compacted fill. Fill shall be keyed into firm native soils. Suitable fill can be obtained from full bench Construction on adjacent segments of the trail.



STA 865 – 1030: DRAINAGE FROM QUARRY ROAD

At this site concentrated storm runoff draining off of the upslope quarry road flows across the trail alignment resulting in erosion and sedimentation. If left unmitigated this will result in damage to the proposed trail.

Recommendations

Drainage on the quarry road should be improved by installing drain dips to break up the flow.

STA 1230: BRIDGE 1

At this site the trail will span an intermittent watercourse on a 35 foot long bridge. See TRAIL BRIDGE SITE OBSERVATIONS (page 16) for a more in-depth description of this site.

STA 2565 – 2630: STEEP SLOPES

Site Conditions

About 65 feet of new trail will climb up across 65% to 80% escarpment above a midslope bench. The escarpment is likely an internal slide scarp to a large deep-seated landslide which underlies the majority of the hillside at this location. No evidence of recent deep-seated slide activity. The steep slope may be subject to infrequent shallow landslide process which could deposit debris onto the trail tread.

Recommendations

To minimize the risk of trail related instability, the trail should be constructed at a maximum 4 foot wide width with the outer edge of the trail supported on a retaining wall or rock fill bench.

STA 3850 – 4050: STEEP SLOPES

Site Conditions

Approximately 200+ feet of new trail will traverse steep 65% to 80% gradient slightly irregular slopes subject to shallow landslide processes. Earth materials exposed on the ground surface and encountered in one shallow hand auger boring (B-8) consists of gravely clayey sand. Depth to bedrock is unknown. No seeps or wet areas observed.

During our field review we observed equivocal evidence of several old weathered and subdued debris slide scars across the hillsides. These features appeared to have been relatively shallow slides restricted to the thin mantle of overlying soil and colluvium. The ages of these shallow landslide features are unknown and we did not observe clear evidence of historic shallow instability in our review of select historic aerial photographs. Based on field observations we find there is a moderate potential for future shallow slope instability to occur in this area. This risk is similar to that on other recreational trails that cross similarly steep slopes.

The location of the trail across seep and potentially unstable slopes places the trail at risk from upslope debris slides and flows. This hazard cannot be avoided in any practical manner. Future upslope instability could result in damage to the trail requiring maintenance or reconstruction. In addition, improper trail construction across these steep sideslopes can increase the risk of shallow landsliding by removing toe support to the hillside. This risk can be mitigated by constructing the trail at a 4 foot width

with minimal cut and supporting the outer edge of the trail on a low 1 to 2.5 foot high retaining wall. Incorporating the recommendations outlined in this report and in the plan documents will mitigate this risk to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.

Recommendations

We recommend the trail be constructed at a 4 foot width with minimal cut and the outer edge of the trail supported on a low 1 to 2.5 foot high retaining wall. Trail drainage shall be strictly controlled and maintained. Periodic maintenance of the trail will be required.

STA 4480: BRIDGE 2

Bridge 2 is a proposed 70 foot long trail bridge to span Congress Springs Creek. See TRAIL BRIDGE SITE OBSERVATIONS (page 16) for a more in-depth description of this site.

STA 4960 – 5800: STEEP AND POTENTIALLY UNSTABLE SLOPES

Site Conditions

At this location the proposed trail will need to climb up across steep (65% to 80%) and slightly benched ground that appears to be subject to both shallow and deep-seated landslide hazards. Earth materials exposed along the ground surface and in one shallow hand auger boring (B-5) consisted of sandy gravely silt to clayey silt.

Review of LiDAR bare earth imagery and field reconnaissance finds the south facing slope above Congress Spring Creek to be underlain by a large 3 acre deep-seated translational landslide complex. The majority of this slide is characterized by generally weathered and subdued ground without evidence of recent or active movement and corresponding to the "dormant-young" morphological age classification of Keaton and DeGraff (1996). A few scattered trees on steeper sideslopes are slightly pistol-butted or have broad sweeps, which is most likely due to shallow soil creep rather than global instability. Though the majority of this slide appears dormant, a couple portions of this slide have experienced relatively recent small scale slope instability.

The first area of relatively recent instability was observed about 150 to 300 feet upslope of Bridge Site 2. This area encompasses about ¼ acres of ground characterized by a small midslope bench with a couple of slightly leaning conifers and a small lobate toe that bulges out onto the steep slope below. This feature appears to be an area of incipient shallow secondary instability and based on the age of the leaning trees likely occurred 30 to 50 years ago. The long term stability of this area is uncertain and based on field observations alone appears to have a moderate potential for future instability in the event of a large magnitude storm or earthquake. Future displacements could range from small scale ground cracking to the mobilization of a larger debris slide. As currently laid out the proposed trail traverses the hillside downslope of this feature before switchbacking and crossing the upper portion of the slide area on gentler ground at SB# 4. Site conditions are such that it is not feasible to avoid this area in any practical manner.

The second area of recent instability is a roughly ¼ acre secondary translational slide block located about 100 feet downstream of the bridge site in an area where Congress Springs Creek has directly undercut the hillside. In this area the slide block has down dropped resulting in a couple of conifer trees on the

slide mass to tilt. This secondary slide is located away from the trail and does not present a direct hazard to the trail or trail bridge.

In our opinion, there is a moderate potential for future shallow and deep-seated landsliding on these slopes in the event of a large magnitude earthquake or storm. Moving forward with trail design will have to be done with the understanding that infrequent slope displacements are possible and cannot be avoided in a practical manner. As a result, future slope displacements could result in damage to the trail requiring repairs or reconstruction. The geologic risk to trail users, however, will be low due to the low frequency and short duration use of the trail, which limits user's exposure to the geologic hazards. Incorporating the recommendations outlined in this report and in the plan documents will mitigate this risk to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.

Recommendations

To minimize the risk of trail related instability, we recommend the trail be constructed along the flagged alignment at a 4 foot width with minimal cut and the outer edge of the trail supported on a low retaining wall. Incorporating the recommendations outlined in this report and in the plans will mitigate this risk to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.

STA 5865 – 6045: STEEP SLOPES

Site Conditions

About 180 feet of new trail is proposed across steep 65% to 75% gradient planar slopes above a tributary to Congress Springs Creek. Earth materials exposed along the ground surface in the first third of the trail alignment consisted of sandy gravel to gravely sand with blocky sandstone at shallow depth. Earth materials exposed along the ground surface and in a shallow hand auger boring (B-4) in the latter two thirds of the alignment consisted of soft to still gravely silty clay with sand. No shallow landslides of significance were observed and based on field observations appears to be a low to moderate potential for shallow slope instability.

Recommendations

To minimize the risk of trail related instability, the trail should be constructed at a maximum 4 foot width. In the area of the clayey soils, the outer edge of the trail will likely need to be supported on a low retaining wall or rock fill bench. During trail construction a silt fence should be installed below the trail to contain any debris that may ravel off the work area before reaching the stream

STA 4960 - 10775: DEEP-SEATED LANDSLIDE AND TRAIL SWITCHBACKS

Site Conditions

Approximately 5,800 feet of new trail will need to switchback up moderate to steep (40% to 65%) slopes within a tributary drainage to Congress Springs Creek that is partially underlain by a 10+ acre deep-seated landslide complex. Sixteen switchbacks will be required to route the trail up the hillside and to avoid steep unstable ground.

The deep-seated landslide is characterized by benched and irregular forested ground with "soft" terrain

features corresponding to the "dormant-young" to "dormant-historic" morphological age classification of Keaton and DeGraff (1996). The slide is comprised of multiple smaller coalescing secondary slide blocks that likely move independently of one another. The slide is drained by an intermittent tributary to Congress Springs Creek, which is deeply incised into the landscape resulting in locally very steep and unstable channel banks.

This slide exhibits varying degrees of activity. Though the majority of the slide appears dormant, portions of the slide have experienced relatively recent small scale slope instability based on the presence of a few leaning trees. Based on field observations we find the large slide to be subject to reactivation during large storms or intense seismic shaking during earthquakes. The most likely scenario would be for small-scale incipient movement resulting in local ground cracking that could offset portions of the trail if future deep-seated slide movement were to occur. Because of the small cuts and fills associated with narrow trail construction in comparison to total slide depth, the proposed trail should not have any measurable impact on the mass balance and stability of the overall larger landslide.

The principal constraints to new trail construction are the steep and unstable slopes found along the incised watercourse draining the slide. To minimize the risk of trail related instability, the proposed trail will need to switchback up the east flank of the slide to avoid crossing steep and unstable terrain adjacent to the deeply incised watercourse draining the center of the slide mass. This will mitigate landslide risk to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.

Recommendations

We recommend the trail make a series of sixteen tight switchbacks up the left flank of the slide. Portions of the trail grade will need to be relatively steep at up to 18%. Where possible the trail should incorporate broad climbing turns at the switchbacks to minimize trail degradation. At two locations (SB#3 and #13) the project proposes switchbacks on 60% planar slopes which will prove challenging to construct. To minimize the amount of grading the switchback will need to be constructed with a relatively tight 7 foot turning radius. The resulting cut will be about 7 feet high with the outer edge of the trail supported on 4 to 5 foot high retaining structures (e.g. Allen block or rock).

STA 11400: BRIDGE 3

Bridge 2 is a proposed 50 foot long trail bridge to span an incised intermittent stream. There are no significant geologic constraints at this crossing. See TRAIL BRIDGE SITE OBSERVATIONS (page 16) for a more in-depth description of this site.

STA 11705 – 11785: STEEP SLOPES

Site Conditions

About 80 feet of new trail is proposed across steep 75% to 80% gradient. Earth materials exposed along the ground surface consist of gravely sandy silt with some clay. No recent shallow landslides of significance were observed.

Recommendations

To minimize the risk of trail related instability, the trail should be constructed at a maximum 4 foot

width. In the area of the clayey soils, the outer edge of the trail will likely need to be supported on a low retaining wall or rock fill bench.

STA 12760: BRIDGE 4

Bridge 4 is a proposed 20 foot long trail bridge to span a very small and shallow ephemeral watercourse. There are no significant geologic constraints at this crossing. See TRAIL BRIDGE SITE OBSERVATIONS (page 16) for a more in-depth description of this site.

STA 14290 - 16005: ROAD TO TRAIL CONVERSION

Site Conditions

Trail follows existing intact but overgrown road for 1,700 feet before connecting with paved winery road. The old road contours across 20% to 50% slopes at an 8 foot width. The entire road is weathered but intact with no significant erosion or instability problems. Several large trees have become established along the roadway but can be easily avoided. There are no significant constraints on this segment of trail.

Recommendations

Standard road to trail conversion is appropriate.

TRAIL BRIDGE SITE OBSERVATIONS

BRIDGE 1: TRIBUTARY

Site Conditions

Bridge 1 is located where the proposed trail will need to span an intermittent stream draining a 26 acre forested watershed. The site is located at the mouth of a narrow and deeply incised ravine where the watercourse drains onto and spreads out across the back edge of a gently sloping alluvial/colluvial filled valley bottom (Figure 4). The upstream ravine is characterized by very steep unstable banks subject to shallow debris slides and debris flows and we observed many small debris slide scars along the steep ravine walls upstream of the crossing. The flashy nature of site hydrology and unstable nature of the watershed can lead to the development of flood events that can carry significant quantities of sediment.

Past debris flows extending down the narrow ravine have deposited slide debris (as a debris fan) at the ravine mouth.

About 80 feet downstream of the ravine mouth, the watercourse spreads out and bifurcates across the gently sloping valley bottom in response to large depositional events. In this area the stream channel is poorly confined and recent deposition is evident following the 2017 winter storms with subsequent incision in 2018-19.

The broad alluvial/colluvial filled valley located downstream of the crossing is likely associated with one or more large scale deep-seated landslides located on either side of the valley. These slides may have pinched the valley bottom allowing for sediment to deposit and form the current broad valley bottom that we see today.

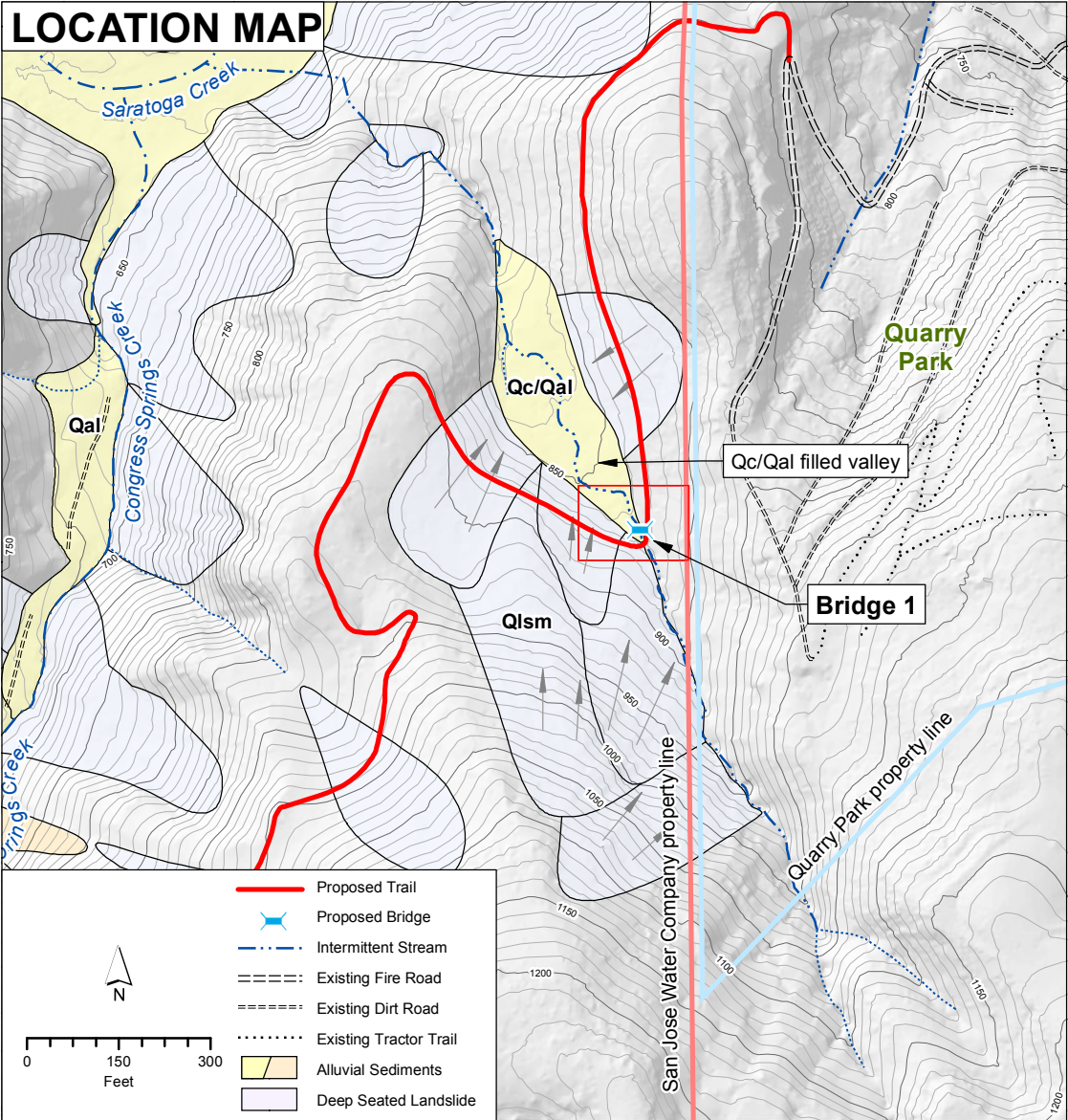


Photo 1: Photo looking downstream at proposed upstream crossing.

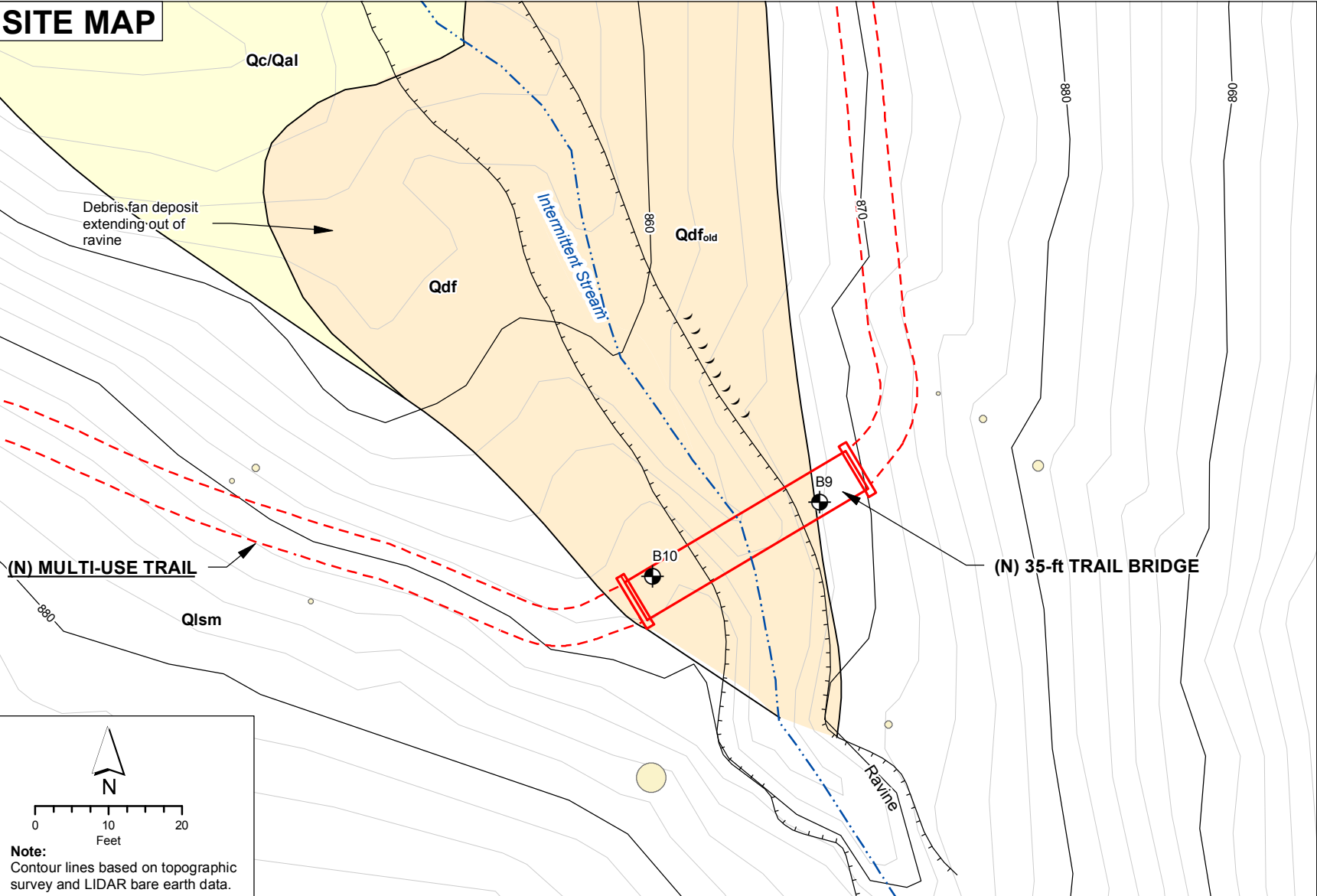
We evaluated two locations where the trail could cross the stream. These two sites include: 1) An upstream crossing location at the ravine mouth and 2) A downstream crossing location on the flat bench.

Upstream site: The upstream site is located at the mouth of the ravine on old slide debris formed by past debris flows extending down the channel. The advantage of this crossing site is the stream is well constrained in the incised channel making a bridge a viable alternative. It also places the crossing at a higher elevation and thereby minimizes the amount of new trail construction across steep sideslopes to the south. The disadvantage is that the location of the bridge at the mouth of the ravine places the bridge at risk from future upslope debris flows. If these future slides are large enough they could impact the bridge structure, potentially damaging or destroying it. Elevating the bridge above the old slide debris will minimize this geologic risk.

LOCATION MAP



SITE MAP



SITE MAP / CROSS SECTION - BRIDGE 1
SARATOGA-TO-SANBORN
TRAIL PROJECT

Date: 5/15/2019
Revised:
Project: SAR-SAR2SAN-767

Downstream site: The downstream crossing site is located on the gently sloping alluvial bench downstream of the ravine mouth (not shown on Figure 4). In this area the site is characterized by low <5% gradient slopes and a shallow, poorly constrained stream channel. In this area the stream appears to migrate and bifurcate across the valley bottom in response to large depositional events. The advantage of this site is that it is located on gentle ground away from the ravine mouth and therefore less at risk from direct impact of a future debris flow. The disadvantage is that it is located in an area of deposition where the stream channel location is poorly constrained and subject to future migration and bifurcation. As a result the trail will be at risk for flooding and deposition. This risk could be mitigated by installing a long bridge across the entire valley bottom. A second problem is that the trail extending south out of the crossing will need to cross a greater length of steep slopes and require at least one additional switchback on moderate to steep slopes compared to the upstream alternative. As a result the trail approach would be at greater risk of instability compared to the upstream alternative.

Summary: Both the upstream and downstream sites are viable for crossing the stream, though not without risk. All things considered, including geologic hazards, trail aesthetics, and bridge approach stability, we believe the upstream site is the more feasible alternative of the two. Though the location of the bridge at the mouth of the ravine places the bridge at risk from future upslope debris flows, large debris flows capable of damaging or destroying the bridge occur only infrequently. The geologic risk to bridge users, however, will be low due to the low frequency and short duration use of the trail bridge, which limits bridge user's exposure to the geologic hazards. Incorporating the recommendations outlined in this report will mitigate this risk to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.

Subsurface Conditions

The Bridge 1 site at the mouth of the ravine is directly underlain by debris flow deposits consisting of medium brown unconsolidated clayey sand to silty sand with local abundant clasts of siltstone and sandstone. The deposits tend to be well graded. The debris flow deposits overlay Franciscan bedrock at depth. The depth to bedrock is unknown.

Haro, Kasunich and Associates drilled two hand auger borings to evaluate soil conditions at the bridge abutments (See Appendix A). Sieve analysis was performed on a soil sample taken at a depth of 2 feet below existing grade. Results of the sieve analysis indicate the bearing material consists of 9.0 % gravel, 41.0 % sand, and 50.0 % clay and silt fractions. The relative density of the soil increased at a depth of 1.5 feet below existing grade from very loose to medium dense to dense. The relative density was estimated by applying full body weight to a ½ inch diameter smooth steel rod at various depths within borings B-10 and B-9 drilled adjacent the proposed bridge abutments. Haro, Kasunich and Associates report that from a geotechnical engineering standpoint, the native soils 1.5 feet below existing grade will provide adequate bearing support for the proposed bridge abutments at the Bridge 1 site.

Pertinent Geologic Hazards

The following summarizes the geologic hazards at the upstream bridge site.

Faulting, Seismic Shaking and Liquefaction:

There are no mapped faults transecting the Bridge 1 site. Based on the foregoing the potential risk of fault rupture appears low.

The Bridge 1 site is subject to high ground accelerations during a large earthquake on the San Andreas Fault or other nearby faults. Please refer to REGIONAL FAULTS AND SEISMICITY (page 6) for a more in-depth discussion.

Regional Liquefaction Maps (Witter et al., 2006) do not depict Quaternary age deposits at the project site and report the liquefaction hazard to be low. Our field observations of the clayey sand and silty sand that underlie the upstream bridge site also finds the liquefaction hazard at the site to be low.

Landsliding:

Deep-seated landsliding: Review of LiDAR bare earth imagery and field reconnaissance finds the Bridge 1 site to be underlain by a 4+ acre deep-seated landslide. We did not observe any clear evidence of recent activity, such as fresh scarps or ground cracks on the portions of these slides near the bridge sites following the 2017 winter storms. Based on the foregoing, the slide appears to have a low and infrequent rate of slide activity. The potential risk to a small, short span trail bridge at this location appears to be low.

Debris flows: The proposed bridge site is located at the mouth of a narrow and steep sided drainage that is subject to debris flows. As previously discussed a debris flow deposit (debris fan) extends out from the mouth of the ravine and onto the flat valley bottom. The tributary stream is incised 4 to 5 feet into these deposits. The age of this deposit is unknown, but based on site geomorphology and the age vegetation established on the debris fan, the site may have experienced a debris flow or other depositional event within the past 20 to 50 years.

The location of the Bridge 1 at the mouth of the ravine places the bridge at risk from impact from future upslope debris flows. The debris flow hazard can be minimized by elevating the bottom of the bridge above the top of the debris slide mass to allow passage of all but the largest debris flow to pass beneath. Though large debris flows capable of damaging or destroying the bridge will be possible in the future, the geologic risk to bridge users will be low due to the low frequency and short duration use of the trail bridge, which limits bridge user's exposure to the geologic hazards. Incorporating the recommendations outlined in this report will mitigate this risk to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.

Flooding:

Waterways Consulting undertook a hydraulic analysis of stream flow to estimate the 100-year flood elevation at the proposed upstream Bridge 1 site. The modeling results indicate the 100-year flood is contained within the channel banks. The depth of flow was calculated at 1.6 feet. Based on the foregoing the proposed Bridge 1 is not subject to flooding provided the channel is not aggraded by sediment from debris flows. We recommend the bottom of the bridge be elevated above the top of the existing ground surface that is composed of the debris slide mass.

Stream Bank Erosion and Instability:

A qualitative slope stability analysis was undertaken to evaluate stream bank erosion and slope stability hazards at the proposed upstream bridge site. This analysis is based on field observations of site geomorphology and earth materials exposed in the channel bank and shallow test pits, and from measurements of site topography.

The tributary stream is incised 4 to 5 feet into old landslide debris resulting in steep channel banks. Stream bank erosion and sloughing of the channel bank is intermittently active along both sides of the channel.

We recommend that the bottom of bridge abutment footing be offset a minimum of 3 feet from a 1.5H:1V line projected from the bottom of the channel bank. In order to minimize the environmental impact of trail structure, hardscape to stabilize the stream bank is not recommended.

Log Jams:

While they are not strictly speaking a geologic hazard, log and debris jams are a natural phenomenon in narrow streams in mountainous terrain, and have the potential to increase flooding and/or debris flow hazards. Future log jams could develop anywhere along the stream during large discharge events and could potentially impact the bridge site either directly or indirectly by diverting stream flow. Though the potential for a future log jam to develop at the site is difficult to quantify, based on field observation the risk to the bridge site appears low.

Recommendations:

We recommend a minimum 35-foot long trail bridge incorporating concrete abutments be installed at the upper crossing (upstream end of the debris fan) as shown on Figure 5.

BRIDGE 2: CONGRESS SPRINGS CREEK

Site Conditions

Bridge 2 is a proposed 70 foot long trail bridge to span Congress Springs Creek. At this location Congress Springs Creek occupies a narrow alluvial filled valley bottom draining a 196 acre forested watershed confined by steep canyon walls (Figure 54). The watercourse is entrenched 6 to 8+ feet through the old fluvial terrace deposits resulting in locally steep channel banks with some areas of erosion. Gently sloping fluvial terraces occupy both sides of the valley.



Photo 3: Looking upstream at Bridge 2

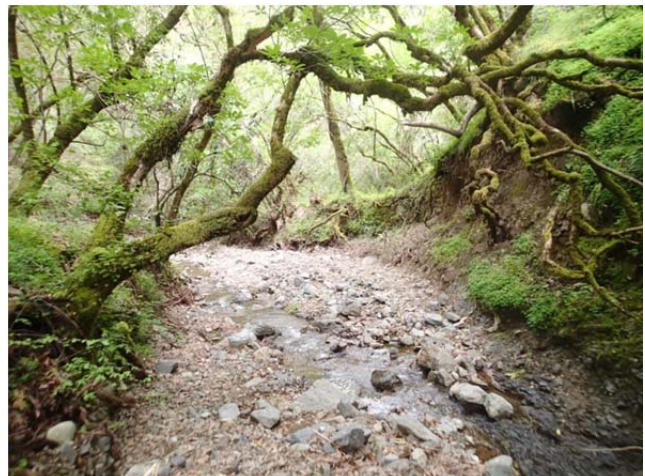
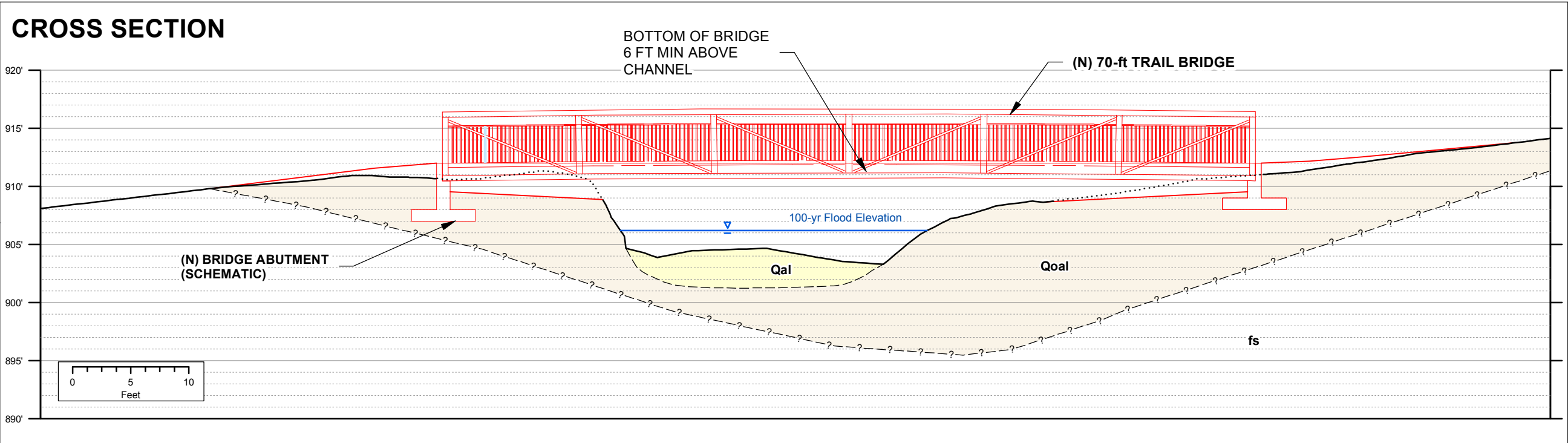
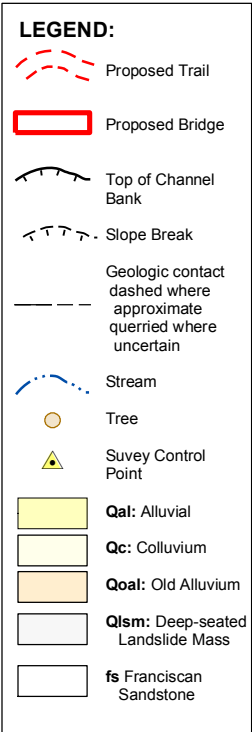
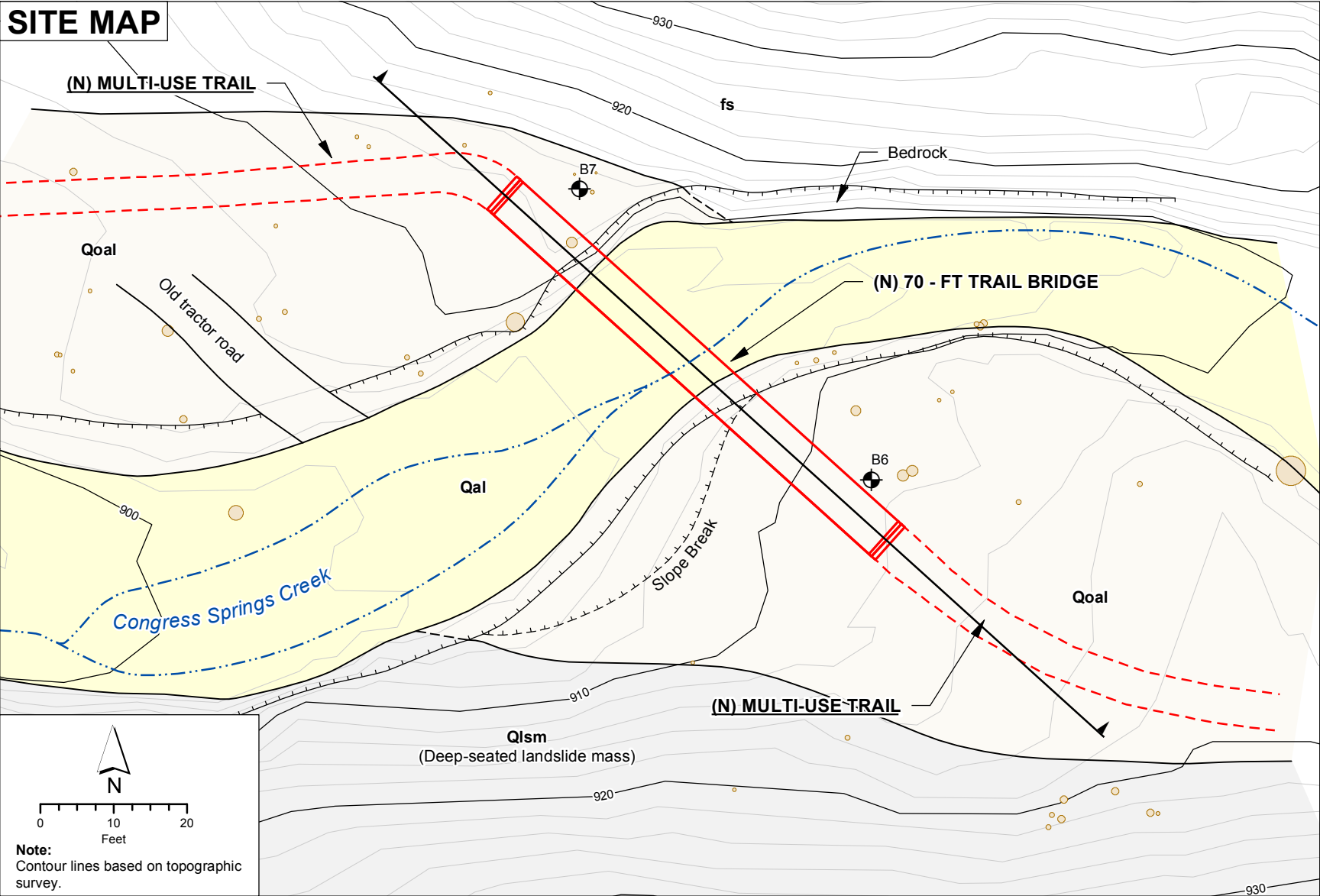
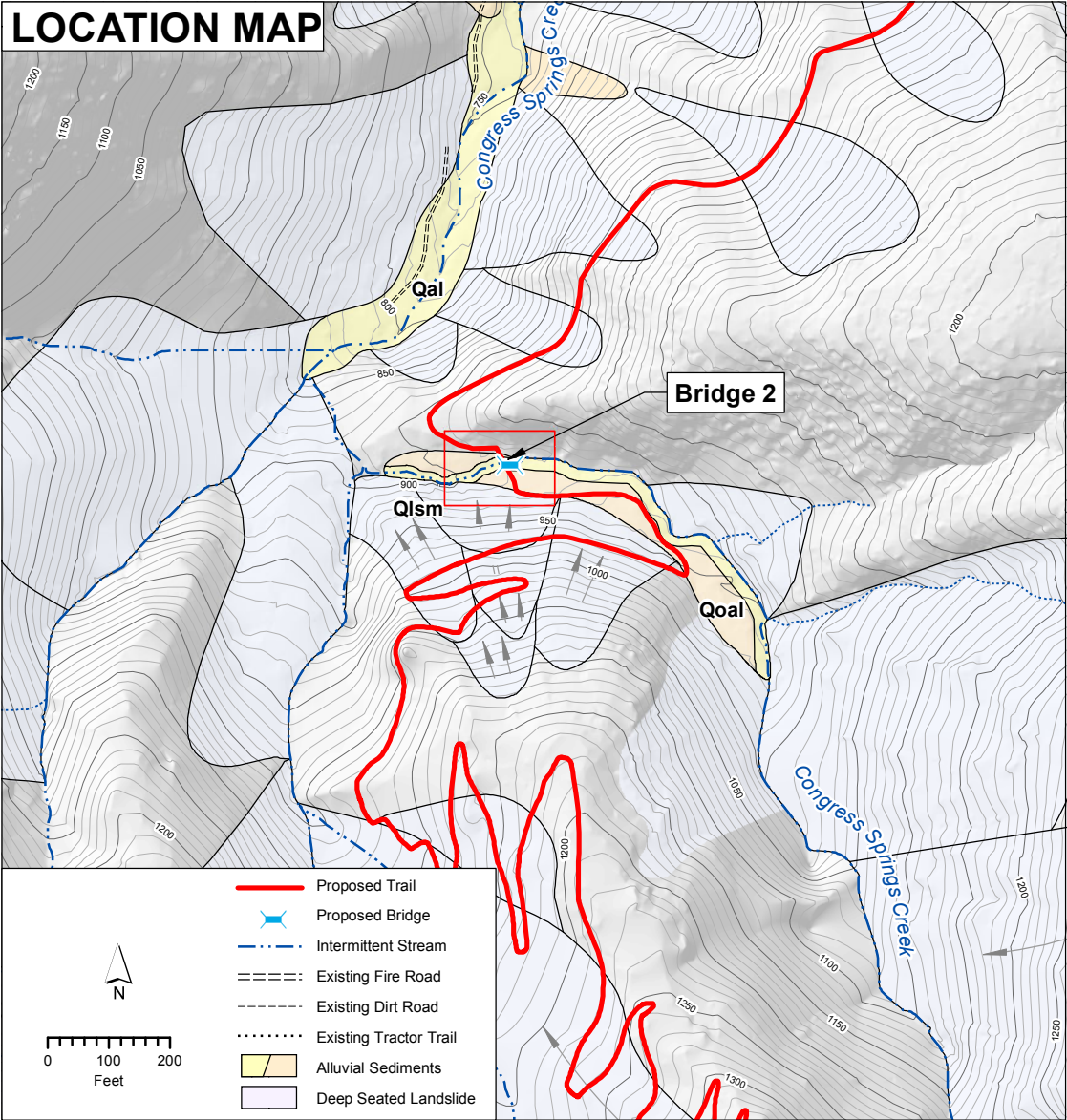


Photo 4: Looking downstream at Bridge 2 where stream flow is directed into the channel bank near the north abutment.



The active stream channel is about 30 feet wide and is gravel, cobble and boulder bedded. The average channel gradient is 6%. Runoff is seasonal with summer low flows going subsurface. Peak stream flows are contained entirely within the entrenched channel. The flashy nature of site hydrology and unstable nature of the watershed can lead to channel erosion and incision, as well as the development of flood events that can carry significant quantities of sediment, treefall, and related debris through the creek corridor.

Outside the valley bottom the side slopes are locally steep, with slope gradients ranging between 50% to greater than 75% slope and subject to shallow landslide processes. The south side of the valley is also underlain by a 3+ acre deep-seated landslide complex that is interpreted to be periodically active.

Subsurface Conditions

Terrace deposits consist of older alluvial sediment consisting of unconsolidated sandy gravel and cobbles with small boulders. These deposits tend to be moderately well-graded with thin lenses of sand and pebbles. The soils appear to be medium dense.

Hard Franciscan sandstone and siltstone is exposed along the north bank of the channel upstream of the crossing. The rock appears locally sheared and fractured but generally resistant to erosion.

Haro, Kasunich and Associates drilled two hand auger borings to evaluate soil conditions at the bridge abutments (See Appendix A). Results of the geotechnical subsurface investigation of the site indicates the bearing material consists of mostly gravel and sand with trace silt and clay fractions. This description is consistent with the soil profile in the nearby exposed creek banks. The relative density of the soil increased at a depth of a 0.5 to 1.0 foot below existing grade from loose to medium dense to dense. The relative density was estimated by applying full body weight to a ½ inch diameter smooth steel rod at various depths within borings B-7 and B-6 drilled adjacent the proposed bridge abutments. From a geotechnical engineering standpoint, the native soils 1.5 feet below existing grade, will provide adequate bearing support for the proposed bridge abutments at the Bridge 2 site.

Geologic Hazards

Faulting, Seismic Shaking:

There are no mapped faults transecting the bridge site, thus the potential risk of fault rupture appears low.

The subject site is subject to high ground accelerations during a large earthquake on the San Andreas Fault or other nearby faults. Please refer to REGIONAL FAULTS AND SEISMICITY (page 6) for a more in depth discussion.

Liquefaction:

Regional Liquefaction Maps (Witter et al., 2006) do not depict Quaternary age deposits at the project site and report the liquefaction hazard to be low. Based on field observations there appears to be a low potential for liquefaction within the near surface soils.

Landsliding:

Deep-seated landsliding: Review of LiDAR bare earth imagery and field reconnaissance finds the slope on the south of the bridge to be underlain by a large 3 acre deep-seated translational landslide complex.

This slide is characterized by steep (65% to 80%) and slightly benched ground. The slide appears to toe out within Congress Springs Creek. Presently Congress Springs Creek is backfilled with alluvial sediment which would act to partially buttress the slope, though to what extent is unknown.

The majority of the slide is characterized by generally weathered and subdued ground without evidence of recent or active movement and corresponding to the "dormant-young" morphological age classification of Keaton and DeGraff (1996). A few scattered trees on steeper sideslopes are slightly pistol-butted or have broad sweeps, which is most likely due to shallow soil creep rather than global instability.

Though the majority of this slide appears dormant, a couple portions of this slide have experienced relatively recent small scale instability. The first area is a roughly $\frac{1}{4}$ acre area of relatively recent instability observed in the upper portion of the hillside about 150 to 300 feet upslope of the bridge site. This area is characterized by a small midslope bench with a couple of slightly leaning conifers and a small lobate toe that bulges out onto the steep slope below. Based on field observations, this feature appears to be an area of shallow secondary instability. Based on the age of the trees we interpret the instability to have occurred 30 to 50 years ago. We did not observe clear evidence of recent slide activity, such as fresh cracks following the 2017 and 2019 storms.

The second area is a roughly $\frac{1}{4}$ acre secondary translational slide block located about 100 feet downstream of the bridge site in an area where Congress Springs Creek has directly undercut the hillside. In this area the slide block has down dropped resulting in a couple of conifer trees on the slide mass to tilt. This secondary slide does not present a direct hazard to the bridge.

Based on field observations of slide morphology, we interpreted the slide to be periodically active and subject to reactivation in event of a large seismic event or prolonged rainfall. Based on our experience, most slides of this type tend to move incrementally resulting in localized small scale ground displacements on the order of a few inches to several feet. Movement at the toe is generally taken up by compressional strain. Incipient slide movement, however, can contribute to secondary shallow debris slides. Quantifying hillslope stability would require a detailed geotechnical investigation incorporating subsurface exploration (which would be difficult if not impossible to undertake due to the remote nature of the site and lack of access for drill rigs), laboratory testing, slope stability modeling and Newmark analysis; all of which is outside the scope of this study.

The location of the proposed Bridge 2 near the toe of a potentially active deep-seated landslide places the bridge at potential risk if and when the slide reactivates. Whether a bridge would suffer structural damage at the project site resulting from slide activity cannot be determined with certainty. This is dependent upon how much, if any, slope displacement occurs at the bridge site. In our opinion, the most likely scenario is that little to no significant displacement would occur at the south bridge abutment within the design life of the bridge.

Nonetheless, moving forward with bridge design will have to be done with the understanding that continued movement of the site is possible and cannot be avoided in a practical manner. Therefore the proposed crossing must be designed to account for future slide movement and/or be constructed in a manner that minimizes injury to users to the extent practicable.

We recommend that Bridge 2 be constructed as shown on Figure 5 and, if feasible, designed for the bridge deck to “float” on top of the footings to accommodate a few inches of horizontal displacement. Though the exact amount of potential future displacement (if any) is unknown, we believe it is economically prudent to design for a small amount of displacement to the extent that it is feasible to do so. In the event the slide experiences small scale creep or compressional strain, this may minimize the amount of damage to the structure. During the life of the bridge, the abutments will need to be periodically inspected, particularly following seismic events and periods of heavy rainfall.

Shallow landsliding: The south facing slopes of Congress Springs Creek are characterized by steep 50% to 75+% gradient planar slopes with evidence of a few scattered old debris slide scars. As discussed above, we observe a roughly ¼ acre area of recent instability 150 to 300 feet upslope of the bridge. This area is characterized by slightly broken ground, a couple of leaning conifers, and a small lobate toe. This may represent incipient movement of a shallow debris slide.

In our opinion, there is a moderate potential for future small shallow debris slides to occur on the steep slopes above the bridge in the event of a large magnitude storm or seismic event. Such failures would most likely be shallow and extend only a short distance downslope. Because of the expected small size and infrequent occurrence of the failures and because the bridge will be offset from the base of the slope, the risk to the bridge will most likely be small.

Small scale rock falls were observed on the north side of the bridge. These do not appear to present a significant hazard to the bridge.

Flooding:

Waterways Consulting undertook a hydraulic analysis of stream flow to estimate the 100-year flood elevation at the proposed bridge site. Their modeling effort indicates the 100-year flood is contained within the channel banks with the depth of flow calculated at less than 3 feet. This is somewhat lower than what we would expect given site conditions. This leads us to believe that because of high sediment load of the stream, channel bed elevation may change overtime in response to depositional and erosional events. For this reason we recommend that the bottom of the bridge be located a minimum of 6 feet above the active stream channel to allow for channel aggradation and passage of debris.

Stream Bank Erosion and Instability:

The north bridge abutment is located at the upstream end of a fluvial terrace and at the outside of a bend in the stream (see Photo 3). Upstream of this location the stream flows along the north side of the valley wall exposing Franciscan bedrock in the channel bank. At the upstream end of the terrace the stream makes a bend to the left resulting in a 7-foot high steep channel bank that exposes coarse alluvial sands, gravels and cobbles. Because stream flow is directed into the bank at this location, the alluvial sediments that comprise the channel bank are subject to erosion.

To minimize the potential for stream bank erosion to undermine the bridge footings, we recommend Bridge 2 abutments be offset a minimum of 15 feet back from the top of the channel bank. This will place the bridge abutment at, or just past, the inside edge of the terrace. This is close to expected contact between the alluvial sediments that comprise the terrace and Franciscan bedrock that underlies the terrace deposits and forms the slope above. The goal is to embed the abutment into stable bedrock that will be resistant to stream erosion or be far enough back so that it is unlikely to be undermined by

stream bank erosion. The south side of the bridge abutment is located well away from the active channel and is not at risk for being undermined by stream bank erosion.

Log Jams:

While they are not strictly speaking a geologic hazard, log jams are a natural phenomenon in narrow streams in mountainous terrain, and have the potential to increase flooding and/or debris flow hazards. Future log jams could develop anywhere along the stream during large discharge events and could potentially impact the bridge site either directly or indirectly by diverting stream flow. Though the potential for a future log jam to develop at the site is difficult to quantify, based on field observation the risk to the bridge 2 site appears low.

Recommendations:

We recommend a minimum 70 foot long trail bridge be installed on Congress Springs Creek as shown on Figure 5. We anticipate a prefabricated metal or fiberglass truss bridge will be the most cost effective bridge structure to construct at the site. A fiberglass bridge can be delivered to the site in pieces via the trail and then assembled onsite. A helicopter can also deliver materials to the site and this may be much more cost effective. A possible drop zone is located on the terrace surface on the downstream side of the bridge crossing.

Placement of the bridge will require removing the 18 inch diameter bay tree located on the north channel bank and which is partially undermined by stream bank erosion. This tree needs to be removed to allow the bridge to be located in a more suitable location and to avoid the potential hazard that this tree were to have on the bridge if it were to fall.

BRIDGE 3: TRIBUTARY

Site Conditions

Bridge 3 is located where the proposed trail crosses a narrow and locally steep sided deep intermittent watercourse draining a 39 acre forested watershed (Figure 6). There are at least two locations approximately 150 feet apart along this segment of stream that are suitable for a trail bridge. The downstream site is located on a more entrenched segment of the stream and would require a 50 foot long bridge, but has a more direct approach and better aesthetics. The upstream site is located where the stream is less entrenched thereby requiring a shorter span bridge, but will require an additional switchback and likely result in higher impacts to the riparian zone. The downstream site is the preferred location and is the only site discussed here.

The proposed bridge site is located where the ravine is entrenched 15 feet deep with steep sidewalls inclined at 60% to 100% gradient. Slope gradients above the ravine are moderate, ranging between 10% to 30%. Shallow stream bank erosion and instability was observed in localized areas along the channel bottom. The active stream channel is approximately 2 to 3 feet wide, sand and gravel bedded, and has a channel gradient of 6%. There is equivocal evidence to suggest the site is underlain by a large scale deep-seated landslide.



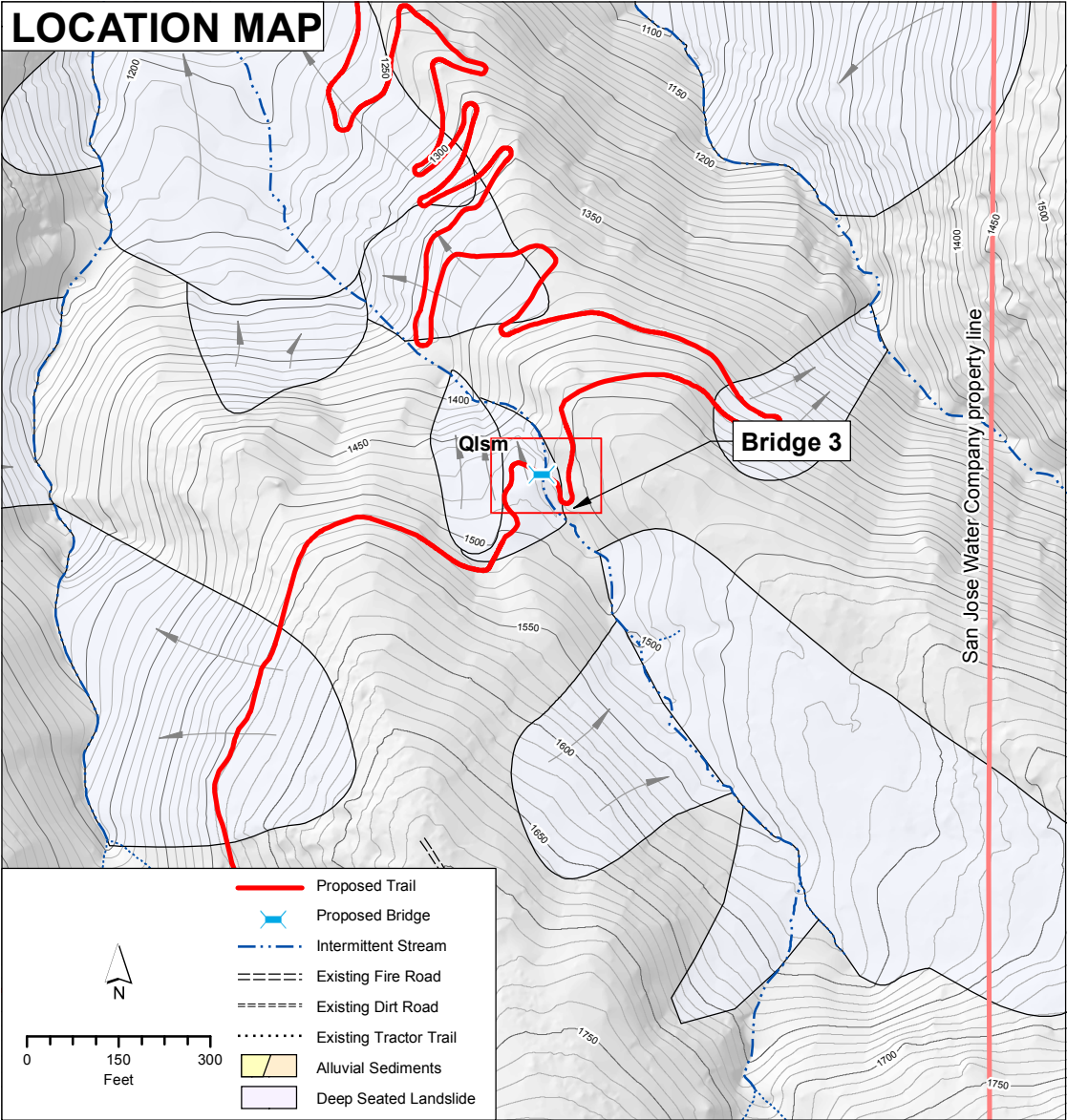
Photo 4: Looking across at Bridge 3

Subsurface Conditions

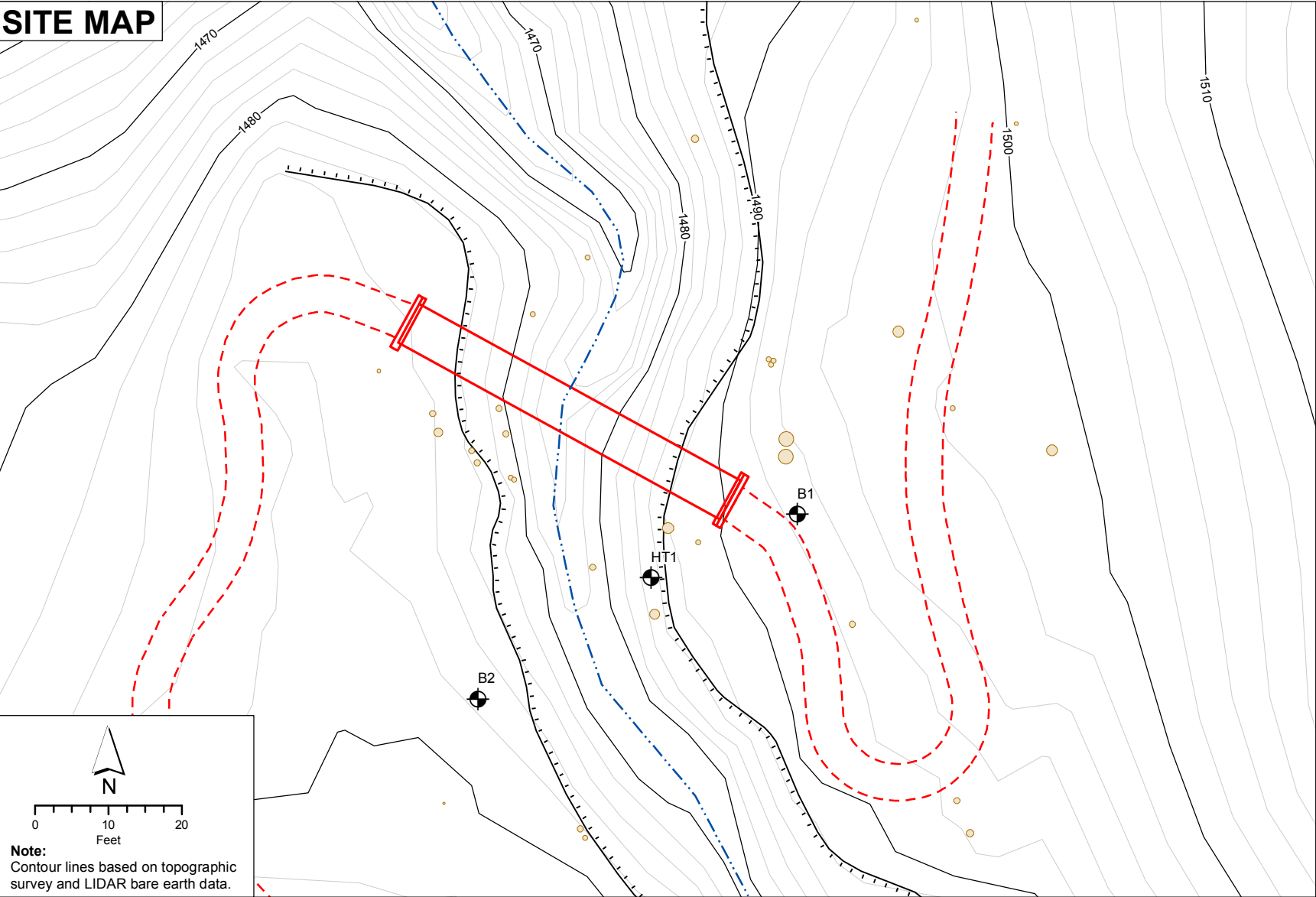
The subsurface profile consists of colluvium overlying Franciscan bedrock. Colluvial soils exposed in the ravine sidewalls consist of medium dense clayey sand to silty sand with scattered clasts of sandstone. Bedrock was not exposed.

Haro, Kasunich and Associates drilled two hand auger borings to evaluate soil conditions at the bridge abutments (See Appendix A). Sieve analysis was performed on a soil sample taken at a depth of 2 feet below existing grade. Results of the sieve analysis indicate the bearing material consists of 17.6 % gravel, 31.5% sand, and 50.9 % clay and silt fractions. The relative density of the soil increased at a depth of 2.5 feet below existing grade from very loose to medium dense to dense. The relative density was estimated by applying full body weight to a ½ inch diameter smooth steel rod at various depths within borings B-1 and B-2 drilled adjacent the proposed bridge abutments. From a geotechnical engineering standpoint, the native soils 1.5 feet below existing grade, will provide adequate bearing support for the proposed bridge abutments at the Bridge 3 site.

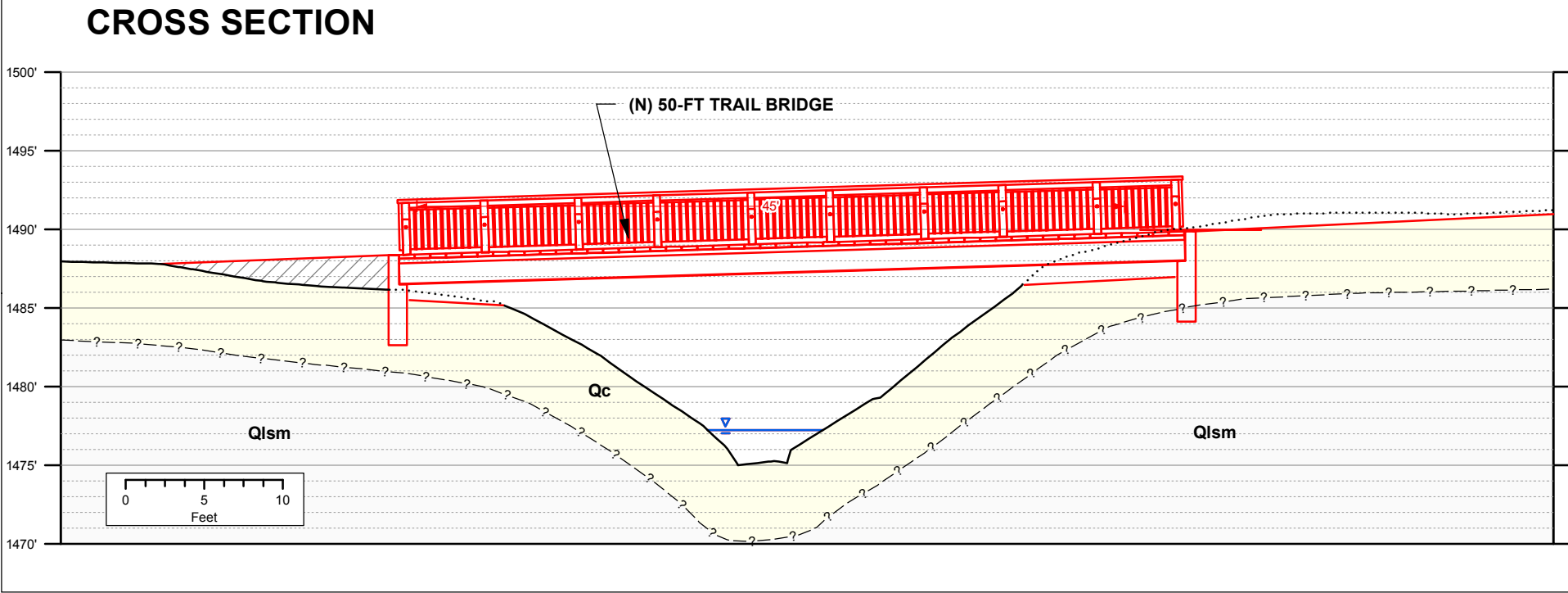
LOCATION MAP



SITE MAP



CROSS SECTION



SITE MAP / CROSS SECTION - BRIDGE 3

SARATOGA-TO-SANBORN

TRAIL PROJECT

Date: 5/15/2019

Revised:

Project: SAR-SAR2SAN-767

FIGURE

6

TIMOTHY C. BEST, CEG

ENGINEERING GEOLOGY AND HYDROLOGY

1002 Columbia Street, Santa Cruz, CA 95060

(831) 425 5832 (831) 425 5830 (fax)

Geologic Hazards

Faulting, Seismic Shaking and Liquefaction:

There are no mapped faults transecting the bridge site thus the potential risk of fault rupture appears low.

The site is subject to high ground accelerations during a large earthquake on the San Andreas Fault or other nearby faults. . Please refer to REGIONAL FAULTS AND SEISMICITY (page 6) for a more in depth discussion.

Regional Liquefaction Maps (Witter et al., 2006) do not depict Quaternary age deposits at the project site and report the liquefaction hazard to be low. Our field observations of the soils and groundwater conditions also find the liquefaction hazard at the site to be low.

Landsliding:

Review of LiDAR bare earth imagery and field reconnaissance finds the Bridge 3 site to be underlain by a 4+ acre deep-seated landslide. We did not observe any clear evidence of recent activity, such as fresh cracks or leaning trees on the portions of this slide near the bridge site following the 2017 storms. Based on the foregoing the slide appears to have a low and infrequent rate of slide activity. The potential risk to a small, short span trail bridge at this location from landsliding appears to be low.

Flooding:

The proposed bridge is located over 8 feet above the active stream channel and well outside of any areas subject to flooding. The potential hazard from flooding is low.

Stream Bank Erosion and Instability:

Both stream banks are subject to shallow bank erosion on the order of 1 to 2 feet. The potential impact of stream bank erosion and instability can be mitigated to a level consistent with the standard of care for siting infrequently used recreational trail bridges in remote areas by offsetting the bottom of bridge footings.

We recommend Bridge 3 incorporate concrete abutments that are be embedded a minimum 3 feet into firm native soils with the bottom of both abutments to be offset 2 horizontal feet from a hypothetical 1.5H:1V line projected upward from the current edge of the channel bottom. This level of embedment and offset appears appropriate for the site conditions and feasible relative to trail bridge constructability.

Recommendations:

There are no significant geologic hazards that would preclude Bridge 3 construction. We recommend a minimum 50 foot long trail bridge with concrete abutments be installed on as shown on Figure 5.

BRIDGE 4: TRIBUTARY

Site Conditions

Bridge 4 is located near the head of a very small ephemeral stream that originates less than 100 feet upslope. The site is located within a broad topographic bowl with slope gradients averaging about 45%. The stream channel is incised about 1 foot deep and 2 feet wide.



Photo 4: Looking upstream at Bridge 4

Subsurface Conditions

The subsurface profile consists of gravely colluvium overlying Franciscan bedrock. Bedrock was not exposed but expected to be found at a shallow depth. From a geotechnical engineering standpoint, the native soils will provide adequate bearing support for the proposed bridge abutments.

Geologic Hazards

Faulting, Seismic Shaking and Liquefaction:

There are no mapped faults transecting the bridge site thus the potential risk of fault rupture appears low.

The site is subject to high ground accelerations during a large earthquake on the San Andreas Fault or other nearby faults. The Mean Peak Ground Acceleration (PGA) on Site Class B soils (rock) at the subject site is reported by the USGS (2017) is reported to be 1.02 g. Please refer to REGIONAL FAULTS AND SEISMICITY (page 6).

Regional Liquefaction Maps (Witter et al., 2006) do not depict Quaternary age deposits at the project site and report the liquefaction hazard to be low. Our field observations of the soils and groundwater conditions also find the liquefaction hazard at the site to be low.

Landsliding:

We did not observe any landslides at the bridge site and the risk of landsliding is found to be low.

Flooding:

The watercourse receives very little runoff with the runoff that does occur being very infrequent. The potential hazard from flooding is low.

Stream Bank Erosion and Instability:

No significant stream bank erosion was observed. The risk of stream bank erosion impacting the bridge is low.

Recommendations:

There are no significant geologic hazards that would preclude Bridge 4 construction. We recommend a minimum 2 foot long trail bridge be installed.

SUMMARY of GEOLOGIC HAZARDS AND CONSTRAINTS

STEEP UNSTABLE SIDESLOPES

- The project area is characterized by moderate to steep slopes and subject to infrequent shallow landslide processes. Field review finds that some slopes exceeding 70% gradient have a moderate to high potential for debris flows and debris slides.
- The proposed trail has been located avoid steep unstable slopes to the extent feasible. However, roughly 1,000 feet of new trail will need to cross steep ground greater than 65% to 70% gradient with some areas having a moderate potential for shallow landsliding. In these areas the proposed trail may be subject to infrequent natural debris slides and debris flows requiring periodic maintenance to clear debris and/or repair the trail tread or in worst-case scenario to reconstruct the trail tread. Such failures are not expected to present a significant hazard to users of the trail using common sense, and in most instances can be repaired with standard trail maintenance. This risk is similar to that on other nearby recreational trails that cross similarly steep slopes.
- To minimize the risk of trail related instability, the trail should be constructed across slopes steeper than 50% gradient on a cut bench (minimal fill) and on slopes steeper than 65% constructed a maximum 4 foot width. Low retaining structures may be required to support the outside edge of trail as site conditions dictate. Incorporating the recommendations outlined in this report and in the plans will mitigate this risk to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.
- Where the trail is built across steep landslide prone areas, the trail may only be temporary, and may need to be rebuilt after slippage of the slide. Therefore, the City should plan for regular maintenance and reconstruction costs.

DEEP-SEATED LANDSLIDING

- The project area is underlain by several large-scale deep-seated translational landslides and earthflows. The landslides in the project area demonstrate varying levels of activity. Though most appear dormant, several appeared to have experienced small scale slope displacements within the past 50 to 100 years. Based on our field observations of slide morphology, we interpret the slides to be potentially active with future slope displacements possible in the event of a large magnitude earthquake or large storms.
- Portions of the trail will need to be routed across several potentially active deep-seated landslides and therefore the trail is inherently at risk of being damaged by future deep-seated slide movement. Future slide movement would most likely result in small scale ground displacement on the order of a few inches to several feet that could offset portions of the trail requiring the trail to be repaired. The proposed trail will not have any measurable impact on the stability of the larger landslides due to the expected small cuts and fills and because the mass balance and hydrology of the slides will not be significantly altered.
- Because of the large size and depth of the landslides it will not be possible to stabilize the slide mass. Therefore, the proposed trail must be designed to either accommodate future slide movement or be constructed in a manner that any damage to the trail would unlikely result in significant harm to the users or increase the risk of erosion and sedimentation. This can be achieved by avoiding the more active portions of the slide complex and where such slopes cannot be avoided routing the trail on the more gently sloping terrain. Incorporating the recommendations outlined in this report and in the plans will mitigate the risk from deep-seated landsliding to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.

TRAIL EROSION

- Soils along the trail do not appear to be highly susceptible to erosion. The proposed trail has been laid out to avoid areas of significant erosion potential, minimize the number of watercourse crossings, avoid fall-line orientation and have less than 15% grade. It is also recommended to incorporate frequent cross drains (e.g. rolling dips, reverse grades, nicks) along the trail. For these reasons, significant trail related erosion and adverse impacts to water quality are not expected, provided the trail is adequately maintained.

GROUNDWATER

- The nature, lithology and estimated permeability of the soils at the site result in the potential for seasonal perched groundwater conditions and saturation from infiltrating rainfall and resultant storm runoff. Where seasonal perched groundwater is encountered the trail tread may become seasonally wet and require maintenance.

WATERCOURSE CROSSINGS

- Watercourses present a significant constraint to new trail construction. Congress Springs Creek

and most of its larger tributaries are deeply incised into the landscape resulting in narrow steep sided ravines with locally unstable slopes. Most of the watercourses are found to have toe slopes that are too steep (> 75% gradient) to allow for stable watercourse crossings.

- The proposed trail will need to cross Congress Springs Creek and three smaller tributaries utilizing the few stable crossing locations that do exist. The project proposes to span all four watercourses to allow users to cross the streams without entering or disturbing the banks of the streams. A more in depth engineering geologic and geotechnical investigation of the proposed bridge crossings is presented in a separate report. The following is a summary of the conclusion and recommendations from that report.

BRIDGE 1:

- Located at the mouth of a narrow and steep sided ravine subject to debris flows.
- The crossing site is subject to several geologic hazards with the most significant hazard from potential from upslope debris flows extending down the ravine to impact the bridge structure. The debris flow hazard can be minimized, but not entirely prevented, by elevating the bottom of the bridge above the top of the existing debris slide mass to allow passage of all but the largest potential future debris flow to past beneath. Though large debris flows capable of damaging or destroying the bridge are possible, the geologic risk to bridge users will be low due to the low frequency and short duration use of the trail bridge, which limits bridge user's exposure to the geologic hazards.
- The project proposes a 35 foot long by 6 foot wide steel stringer bridge with wood deck and railing and concrete abutments. It will be constructed in place.

BRIDGE 2:

- Located on Congress Springs Creek, which occupies a narrow alluvial-filled valley with the watercourse entrenched 6 to 8+ feet through the old fluvial terrace deposits.
- We observed a large deep-seated landslide complex underlying the steep slopes to the south of the bridge site. We interpret this slide to be periodically active and subject to infrequent localized small scale slope displacements in the event of a large magnitude earthquake or storm event. Whether a bridge would suffer structural damage from future slide activity cannot be determined with certainty, but in our opinion, the most likely scenario is that little to no significant displacement would occur at the south bridge abutment within the design life of the bridge. Nonetheless, moving forward with bridge design will have to be done with the understanding that continued movement of the site is possible and cannot be avoided in a practical manner. To minimize the landslide risk at this location we recommend that at least one of the bridge abutments be engineered for the bridge deck to "float" on top of the footings and accommodate a minimum of 6 inches of horizontal displacement.
- The steep slopes to the south of the bridge are also subject to infrequent shallow debris slide processes. In our opinion, there is a moderate potential for future small shallow debris slides to occur on the steep slopes above the bridge in the event of a large magnitude storm or seismic event. Such failures would most likely be shallow and extend only a short distance downslope. Because of the expected small size and infrequent occurrence of the failures and

because the bridge will be offset from the base of the slope, the risk to the bridge will most likely be small.

- The north bridge abutment is located at the outside of a bend in the stream and therefore subject to stream bank erosion. To mitigate the potential for stream bank erosion to undermine this bridge footing at this location, we recommend the bridge abutment be offset a minimum of 15 feet back from the top of the channel bank and bottom of the footing founded into firm bedrock.
- The project proposes a 70 foot long by 6 feet wide prefabricated steel or fiberglass truss and concrete abutments

BRIDGE 3:

- This bridge will be located where the proposed trail crosses a narrow and locally steep sided deep ravine drained by an intermittent watercourse. There are no significant geologic hazards that would preclude trail bridge construction
- The project proposes a 50 foot long by 6 foot wide steel stringer bridge with wood deck and railing and concrete abutments. It will be constructed in place.

BRIDGE 4

- This bridge will be located where the proposed trail crosses a very small ephemeral watercourse. There are no significant geologic hazards that would preclude trail bridge construction
- The project proposes a 20 foot long by 6 foot wide glulam or steel stringer bridge with wood deck and railing and concrete abutments. It will be constructed in place.

SEISMIC SHAKING

- The project site is in a seismically active area and is very close to the San Andreas Fault Zone; a major potential source of severe seismic shaking. Severe damage is likely in the event of a major earthquake on a nearby segment of the San Andreas Fault. The possibility of seismically induced landsliding and potential liquefaction exists. Trail and bridge repairs will be necessary in the event of a severe earthquake.

SWITCHBACKS

- As currently proposed, the trail will require 18 switchbacks or climbing turns. A minimum 9-foot centerline turning radius is recommended.
- The majority of proposed switchbacks are located on moderate 35% to 45% gradient stable slopes. Two switchbacks are proposed on relatively steep 50% to 65% gradient slopes (Sites SB3, and SB13). Because of the steep slopes, construction of these switchbacks may prove to be difficult resulting in larger cuts and fills. To minimize the amount of grading and mitigate the potential impact that construction may have on slope stability we recommend that switchbacks located on slopes steeper than 60% be constructed with a centerline radius of 7 feet with the downslope leg of the trail supported on a 4.5 foot high retaining wall or rock buttress. Because of

the relatively tight turn the trail the switchback may be subject to erosion. To minimize this erosion risk the trail design should incorporate an uphill grade break leading to the switchback to slow cyclists through the turn.

CONCLUSIONS

This report presents the findings of our engineering geologic and geotechnical investigation of the proposed Saratoga - Sanborn Trail.

Our investigation finds the proposed trail to be located in a geologically active and potentially unstable area, and as such, is inherently subject to several potentially significant geologic hazards. These hazards are discussed in detail in the text of this report. The geologic hazards present at the site could, in a worst case scenario, subject the trail and trail elements to structural damage or ground failure.

Although the proposed trail project is located in an area of potential significant geologic hazards and damage to the trail or trail structures may occur during adverse geologic events (e.g. intense storms and high ground accelerations during earthquakes), the risk to users from the geologic hazards is expected to be low due to the short duration and low frequency of trail use. Therefore the users of the trail and trail bridges, if exercising reasonable common sense, are not expected to be subject to risks from naturally occurring geologic hazards beyond a reasonable level of risk consistent with recreational trail use. The trail and trail structures will require routine inspection, maintenance and repair as needed to abate the risks from geologic hazards.

We therefore are of the opinion that the proposed project is acceptable from a geologic and erosional standpoint if all recommendations outlined in this report are properly implemented and maintained. Incorporating the recommendations outlined in this report and in the plans will mitigate this risk to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts.

DESIGN RECOMMENDATIONS

Recommendations for constructing a sustainable trail along the identified alignment are provided below.

TRAIL DESIGN

1. The proposed trail and trail bridges shall be constructed along the mapped alignment represented in the accompanying plan documents and as identified in the field.
2. The new trail segments shall be laid out to conform to natural terrain to create an aesthetically pleasing alignment. The alignment should avoid long straight reaches. The alignment should incorporate natural terrain features to form required reverse grades to the extent feasible.
3. The trail shall be constructed at a maximum 8 to 15% sustained grade. Short segments greater than 15% gradient may be allowed.
4. Trail construction
 - a. On slopes < 50% the trail shall be less than 5-feet wide and constructed on a partial bench (balanced cut and fill);
 - b. On slopes > 50 and < 65% % the trail shall be less 5-feet wide and constructed on a cut bench (minimal fill);
 - c. On slopes > 65% % the trail shall be less than 4-feet wide and constructed on a cut bench (minimal fill);
 - d. On select slopes greater than 65% the trail tread may need to be supported on low retaining wall as site conditions dictate.
5. Areas to receive structural or broadcast fill shall be stripped to remove all vegetation, roots, brush, highly organic soils and other unsuitable fill material (~ 4" depth). Structural fill placed greater than 6 inches deep shall be compacted to minimum 85 percent relative compaction (per ASTM D 1557). During placement and compaction of fill, the moisture content of the materials being placed shall be maintained as necessary. Structural fill shall be placed no steeper than 1.5H:1V (unless otherwise specified or directed).
6. The on-site soil may be used as compacted fill once it is processed. Processing should include moisture conditioning and removing cobbles and boulders greater than 3 inches in diameter and organic material. The material used for fill shall be approved by a representative of Timothy C. Best in the field during grading operations.
7. Temporary cuts within the alluvial deposits may be made at 1:1 gradient to a height of 5 feet.
8. All deleterious spoils from site excavation not used as structural fill shall be spread onsite per plans as directed by Engineer.
9. Cuts shall be inclined 0.5H:1V in competent bedrock and 0.75H:1V in colluvial soils unless otherwise specified on plans.
10. The trail should be out-sloped about 5 to 8 percent. Every year or two, maintenance may be needed to return and "de-berm" sections of trail where soil compaction and displacement have exceeded

the outsloping.

11. The trail shall incorporate frequent reverse grade dips at roughly 100 to 150 foot spacings.
12. Incorporate climbing turns at switchbacks to the extent feasible.
13. The City should recognize that a trail built across steep landslide prone areas may only be temporary, and may need to be rebuilt after slippage of a slide. The City should plan appropriately for maintenance and reconstruction costs.
14. All bridges should have clear span over streams. Bridge abutments shall be located outside the 100-year flood elevation.
15. We recommend a licensed structural engineer provide design criteria for the bridge and abutment structures. We require that we review the civil engineers plans prior to them being finalized so that we may provide comments.
16. All trails should be designed in accordance with the Countywide Trails Master Plan Design and Management Guidelines.

DRAINAGE AND EROSION CONTROL

1. During project construction, the contractor shall be responsible for implementing appropriate and necessary drainage and erosion control measures to minimize storm water runoff from the construction site, pursuant to applicable regulations and permits.
2. The following strategies to ensure that storm water pollution is prevented shall be employed:
 - a. Limit the extent of trail under construction at any given time
 - b. Install temporary silt fences as prescribed on plans
 - c. Install permanent erosion control measures as trail construction progresses. Permanent erosion control measures include:
 - d. Install frequent reverse grade dips at roughly 100 to 150 foot spacings.
 - e. Exposed mineral soils outside of the trail running surface greater than 50 square feet (sf) and with exposed slope distance exceeding 10 feet and with less than 80% ground coverage of natural vegetation shall be mulched in order to reduce the potential for short-term sheet and rill erosion. Mulch using native duff and slash.
3. Winter construction
 - a. Any grading for the project after October 1 shall be completed in dry weather or low rainfall (less than ½ inch per 24 hour period).
 - b. A minimum of 200 linear feet of straw wattle and erosion control blankets shall be available at staging area or on site at all times.
 - c. In the event of 25 percent chance of forecast inclement weather (greater than ½ inch of rainfall in 24 hour period), temporary erosion control measures (e.g. straw wattles, silt fence, erosion control blankets, etc) shall be installed to protect the section of trail that is currently under construction.

BRIDGE DESIGN

BRIDGE 1

1. We recommend a minimum 35-foot long trail bridge be installed as shown on Figure 5.
2. The bottom of the proposed bridge should be elevated above the debris fan surface.
3. The bottom of bridge abutment footing a minimum of 3 feet from a 1.5H:1V line projected from the bottom of the channel bank.
4. A structural engineer shall provide design criteria for the proposed bridge structure.
5. In our opinion, bridge materials can be delivered to the site via the proposed trail once it is constructed.

BRIDGE 2

1. We recommend a minimum 70-foot long trail bridge be installed as shown on Figure 5. We anticipate a prefabricated metal or fiberglass truss bridge will be the most cost effective bridge structure to construct at the site.
2. The north bank bridge abutment should be offset a minimum of 15 feet back from the top of the channel bank and founded in firm bedrock or a minimum of 4 feet below existing grade. The south bridge abutment may incorporate broad spread footing
3. To the extent feasible we recommend that Bridge 2 be designed for the bridge deck to “float” on top of the footings to accommodate a few inches of horizontal displacement.
4. The bottom of the bridge shall be located a minimum of 6 feet above the active stream channel.
5. A structural engineer shall provide design criteria for the proposed bridge structure.
6. A fiberglass bridge can be delivered to the site in pieces via the trail and then assembled onsite. A helicopter can also deliver materials to the site and this may be much more cost effective. A possible drop zone is located on the terrace surface on the downstream side of the bridge crossing.

BRIDGE 3

1. We recommend a minimum 50-foot long trail bridge be installed as shown on Figure 5.
2. The bottom of bridge abutment footing are be embedded a minimum 3 feet into firm native soils with the bottom of both abutments to be offset 2 horizontal feet from a hypothetical 1.5H:1V line projected upward from the current edge of the channel bottom.
3. A structural engineer shall provide design criteria for the proposed bridge structure.
4. In our opinion, bridge materials can be delivered to the site via the proposed trail once it is constructed.

BRIDGE 5

1. We recommend a minimum 20-foot long trail bridge be installed with abutments founded into firm native soils.
2. A structural engineer shall provide design criteria for the proposed bridge structure.

FOUNDATION RECOMMENDATIONS AND LATERAL PRESSURES

1. Based on our investigation, we recommend new bridge foundation abutments be supported on native older alluvial or colluvial soils at the site with the bottom of the excavations compacted with backhoe bucket.
2. The abutments should be embedded a minimum of 3 feet below grade.
3. Bridge abutments may be designed for an allowable soil bearing pressure of 1,500 psf for dead plus live loads. This value may be increased by one-third to include short-term seismic and wind loads.
4. For passive lateral resistance, 250 pcf, equivalent fluid weight acting against the abutment is appropriate. The top 2 feet of soil should be neglected.
5. Abutments should be designed to resist a combined active earth and hydrostatic pressure of 81 pcf, equivalent fluid weight. This assumes an undrained condition.
6. If an earthquake load is to be applied, apply a seismic surcharge equivalent to 19 H psf per foot of wall height.
7. The bottoms of all abutments should have a minimum 10 foot horizontal separation from the adjacent creek bank slope surface.
8. Abutments should be vertically reinforced their full length. The vertical reinforcement should be lapped and tied each way to the upper concrete abutment. Actual reinforcement requirements should be determined by the structural engineer.
9. Prior to placing concrete, all abutment excavations should be thoroughly cleaned. The abutment excavations must be observed by the soil engineer or his representative prior to placing concrete. If unusual or unforeseen soil conditions are found during construction, additional recommendations may be required.

OTHER

1. The findings and recommendations presented in this report are preliminary and contingent upon our review of the final plans. We require the opportunity to review plans and details prior to final design and completion.
2. The recommendations presented in this report require our observation and testing of the earthwork and foundation excavations. This allows us to confirm anticipated soil conditions and to provide supplemental recommendations as site conditions warrant. If we do not review the plans and provide observation services during the earthwork phase of the project, we assume no responsibility for misinterpretation of the recommendations in this report.

REFERENCES

- Atwater, T., 1970, Implications of Plate Tectonics for the Cenozoic Tectonic Evolution of Western North America: Geological Society of America Bulletin, v. 81, no. 12, p. 3513-3536.
- Brabb, E. E., Graymer, R. W., and Jones, D. L., 2000, Geologic map and map database of the Palo Alto 30' x 60' quadrangle, California: U. S. Geological Survey, Miscellaneous Field Studies MF-2332, scale 1:24,000.
- Bryant, W. A., 2000, Quaternary fault and fold database of the United States: U.S. Geological Survey website: <http://earthquakes.usgs.gov/hazards/qfaults>.
- Graham, S. A., and Dickinson, W. R., Apparent offset of on-land geologic features across the San Gregorio-Hosgri fault trend, *in* Proceedings San Gregorio-Hosgri fault zone, California 1978, California Division of Mines and Geology Special Report 137, p 13-23.
- Keaton, J. R., and DeGraff, J. V., 1996, Surface Observations and Geologic Mapping, *in* Turner, A. K., and Schuster, R., eds., Landslides: Investigation and Mitigation: Transportation Research Board, Special Report 247: Washington D.C., National Academy Press, p. 178-230.
- McLaughlin, R. J., Sorg, D. H., and Helley, E. J., 1996, Constraints on slip histories of thrust faults of the southwestern San Francisco Bay area from geologic mapping investigations: U.S. Geological Survey Open-File Report 96-267, p. 65-70.
- USGS, 2017a, Soil Type and Shaking Hazard in the San Francisco Bay Area (<https://earthquake.usgs.gov/hazards/urban/sfbay/soiltype/>).
- , 2017b, U.S. Seismic Design Maps, For seismic design parameter values from the 2015 NEHRP Recommended Seismic Provisions, which are being adopted into the 2016 ASCE 7 Standard and the 2018 International Building Code, USGS Earthquake Hazard Reduction Website: <https://earthquake.usgs.gov/designmaps/us/application.php>
- USGS, and CGS, 2006, Quaternary fault and fold database for the United States, from USGS web site: <http://earthquakes.usgs.gov/hazards/qfaults/>.
- WCA, 1977, Geologic map of the Congress Springs Study Area: unpublished consultant map prepared for City of Saratoga by William Cotton and Associates, dated May 3, 1977, scale 1:3000
- WGOCEP, 1996, Database of Potential Sources For Earthquakes Larger than Magnitude 6 in Northern California, by The Working Group on Northern California Earthquake Potential: U.S. Geological Survey Open-File Report 96-705 (<http://quake.wr.usgs.gov/hazprep/NCEP/>).
- Witter, R. C., Knudsen, K. L., Sowers, J. M., Wentworth, C. M., Koehler, R. D., Randolph, C. E., Brooks, S. K., and Gans, K. D., 2006, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California: USGS Open File Report 2006-1037 (<http://pubs.usgs.gov/of/2006/1037/>).

INVESTIGATIVE LIMITATIONS

- 1) The purpose of this study was to evaluate the implications of the proposed project with respect to erosion and hillslope stability for its intended use as a recreation trail.
- 2) Our observations were limited to surface expressions and limited natural and artificial exposures of subsurface materials at and adjacent to the project site. For the above reasons, the conclusions should be considered limited in extent. The plan does not guarantee stability of the trail, rather it is intended to provide recommendations that will improve visitor access and reduce the likelihood of future trail related erosion with sediment delivery to streams. Unforeseen drainage conditions may result in additional erosion.
- 3) This written report comprises all of our professional opinions, conclusions and recommendations. This report supersedes any previous oral or written communications concerning our opinions, conclusions and recommendations.
- 4) The conclusions and recommendations noted in this report are based on probability and in no way imply the site will not possibly be subjected to ground failure or seismic shaking so intense that structures or roads will be severely damaged or destroyed.
- 5) This report is issued with the understanding that it is the duty and responsibility of the client, or his or her representative or agent, to ensure that the recommendations contained herein are fully implemented.

The findings of this report are valid as of the present date. However, changes in the conditions of a property or landform can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside our control.

APPENDIX A: BORING LOGS AND GEOTECHNICAL LAB WORK

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

GRAIN SIZES									
U.S. STANDARD SERIES SIEVE					CLEAR SQUARE SIEVE OPENINGS				
200	40	10	4		3/4"	3"	12"		

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

RELATIVE DENSITY		CONSISTENCY			SAMPLING METHOD			H ₂ O	
SANDS AND GRAVELS	BLOWS PER FOOT*	SILTS AND CLAYS	STRENGTH (TSF)**	BLOWS PER FOOT*	STANDARD PENETRATION TEST	T		Final	
VERY LOOSE	0 - 4	VERY SOFT	0 - 1/4	0 - 2	MODIFIED CALIFORNIA	L or M		Initial	
LOOSE	4 - 10	SOFT	1/4 - 1/2	2 - 4	PITCHER BARREL	P		Water level designation	
MEDIUM DENSE	10 - 30	FIRM	1/2 - 1	4 - 8	SHELBY TUBE	S			
DENSE	30 - 50	STIFF	1 - 2	8 - 16	BULK	B			
VERY DENSE	OVER 50	VERY STIFF	2 - 4	16 - 32					
		HARD	OVER 4	OVER 32					

*Number of blows of 140 lb hammer falling 30 inches to drive a 2" O.D. (1 1/8" I.D.) split spoon sampler (ASTM D-1586)

**Unconfined compressive strength in tons/ft² as determined by laboratory testing or approximated by the Standard Penetration Test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

KEY TO BORING LOGS Saratoga-To-The Sea

SCALE:

DRAWN BY: AK

DATE: April 2019

REVISED:

JOB NO. SCL11622

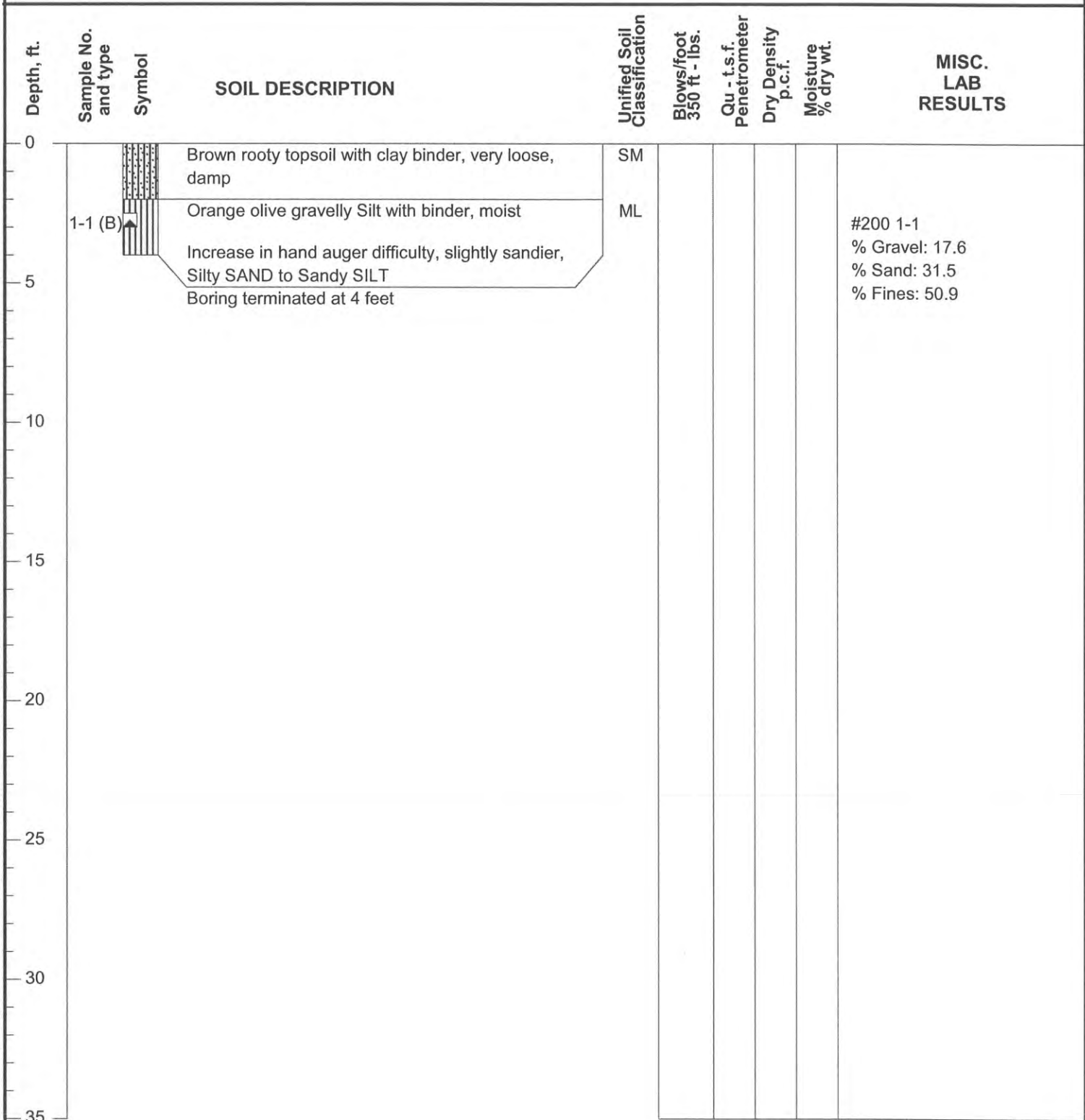
HARO, KASUNICH & ASSOCIATES, INC.
GEOTECHNICAL AND COASTAL ENGINEERS
116 E. LAKE AVENUE, WATSONVILLE, CA 95076
(831) 722-1475

FIGURE NO. 1

SHEET NO.

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-1



SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKALOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019



HARO, KASUNICH AND ASSOCIATES, INC.

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-2

SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKA\LOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Brown loose Sandy SILT with binder and roots	ML					
			Gravelly Sandy SILT, lighter in color, firm-stiff/medium dense, very damp	GM-ML					
			Increase in moisture, moist						
			Boring terminated at 3 feet						
5									
10									
15									
20									
25									
30									
35									

HARO, KASUNICH AND ASSOCIATES, INC.

BY: sr

FIGURE NO. 3



Saratoga-To-The-Sea Trail

PROJECT NO. SCL11622

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-3

SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKA\LOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Brown gravelly Sandy SILT with roots (topsoil)	ML GM					
			Silty coarse gravel, damp, medium dense						
			Hand auger refusal at 1.5 feet						
5									
10									
15									
20									
25									
30									
35									

HARO, KASUNICH AND ASSOCIATES, INC.

BY: sr

FIGURE NO. 4



Saratoga-To-The-Sea Trail

PROJECT NO. SCL11622

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-4

SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKALOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Dark brown topsoil, Sandy SILT with roots	ML					
4-1 (B)			Dark Brown FAT CLAY with SAND, soft	CH					
			Gravelly Silty CLAY, soft to firm						
			Gravelly Silty CLAY, firm to stiff	CH					
5			Boring terminated at 4 feet						#200 Wash 4-1 % Gravel: 8.9 Sand: 32.2 % Fines: 58.9 Atterberg Limits 4-1 LL = 65 PL = 27 PI = 38
10									
15									
20									
25									
30									
35									


HARO, KASUNICH AND ASSOCIATES, INC.

BY: sr

FIGURE NO. 5

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-5

SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKALOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Brown Sandy Gravelly SILT with roots Increase in gravels at 1' Boring terminated at 2 feet	ML					
5									
10									
15									
20									
25									
30									
35									

HARO, KASUNICH AND ASSOCIATES, INC.

BY: sr

FIGURE NO. 6



Saratoga-To-The-Sea Trail

PROJECT NO. SCL11622

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-6

SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKALOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Brown Gravelly SAND with SILT (topsoil)	SM					
			Local cobbles	SM-GM					
			Boring terminated at 3 feet						
5									
10									
15									
20									
25									
30									
35									

HARO, KASUNICH AND ASSOCIATES, INC.

BY: sr

FIGURE NO. 7




Saratoga-To-The-Sea Trail

PROJECT NO. SCL11622

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-7

SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKALOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Brown Gravelly Silty SAND with roots (topsoil)	SM					
			On dense (no roots)	GM					
			Boring terminated at 2 feet						
5									
10									
15									
20									
25									
30									
35									

HARO, KASUNICH AND ASSOCIATES, INC.

BY: sr

FIGURE NO. 8



Saratoga-To-The-Sea Trail

PROJECT NO. SCL11622

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-8

SuperLog CivilTech Software, USA www.civitech.com File: C:\superlog4\HKA\LOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0		Fine Silty SAND with gravels	SM					
		Increase moisture, Sandy SILT (trace gravels)	ML					
		Increase in binder at 2'						
		Boring terminated at 2 feet						
5								
10								
15								
20								
25								
30								
35								



HARO, KASUNICH AND ASSOCIATES, INC.

BY: **sr**

FIGURE NO. 9

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-9

SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKALOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Dark brown topsoil, gravelly sandy Silt with clay binder	ML					
			Gravel with sand and silt	GM					
			Boring terminated at 2 feet						
5									
10									
15									
20									
25									
30									
35									


HARO, KASUNICH AND ASSOCIATES, INC.

BY: sr

FIGURE NO. 10

LOGGED BY AK DATE DRILLED 2-21-19 BORING DIAMETER 4" BORING NO. B-10

SuperLog CivilTech Software, USA www.civiltech.com File: C:\superlog4\HKA\LOGS\SCL11622 Saratoga-To-The-Sea Trail.log Date: 4/26/2019

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Dark brown gravelly sandy silt (topsoil)	ML					
			Dark brown Sandy SILT with clay binder	ML					
	10-1 (B)		Stiff, damp						
			Boring terminated at 3 feet						#200 Wash 10-1 % Gravel: 9.0 % Sand: 41.0 % Fines: 50.0
5									
10									
15									
20									
25									
30									
35									

HARO, KASUNICH AND ASSOCIATES, INC.

BY: sr

FIGURE NO. 11



#200 Sieve Wash Analysis

ASTM D 1140

Job No.: 032-470
Client: Haro, Kasunich & Associates
Project: Saratoga-To-The-Sea (S2S0)

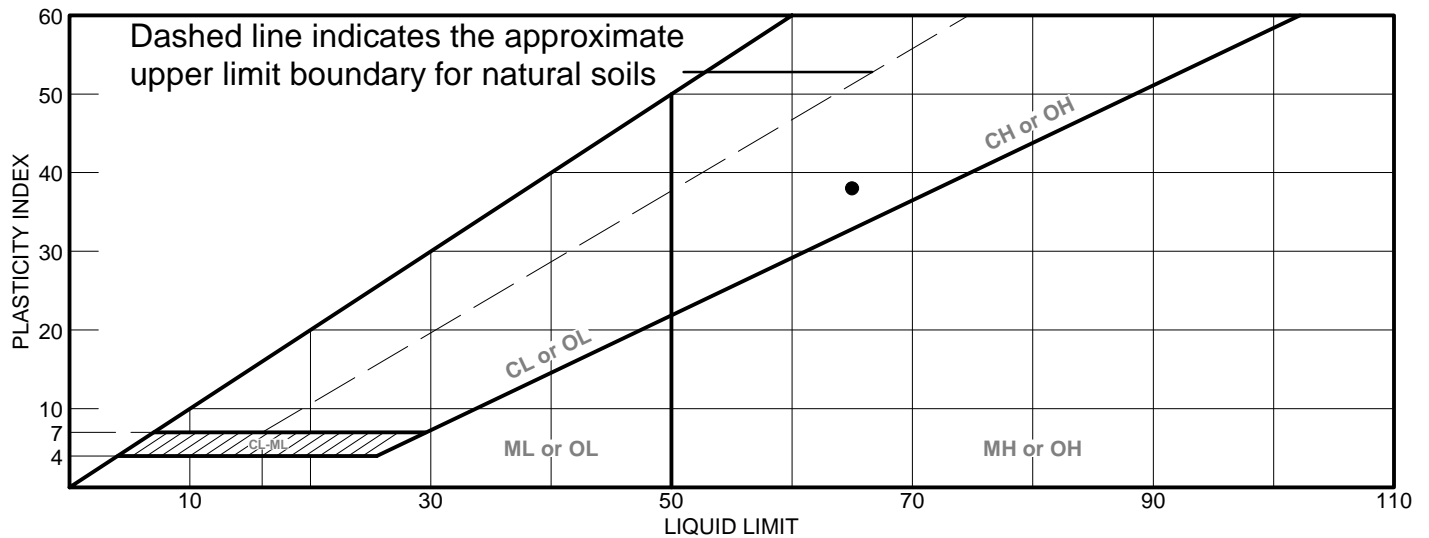
Project No.: SCL11622
Date: 3/19/2019
Run By: MD
Checked By: DC

Boring:	1	4	10					
Sample:	1-1	4-1	10-1					
Depth, ft.:	2.5	1.5	2					
Soil Type:	Reddish Yellow Sandy CLAY w/ Gravel	Very Dark Gray Sandy Fat CLAY	Dark Brown Sandy CLAY					
Wt of Dish & Dry Soil, gm	658.0	454.7	532.5					
Weight of Dish, gm	337.5	311.5	278.2					
Weight of Dry Soil, gm	320.5	143.2	254.3					
Wt. Ret. on #4 Sieve, gm	56.5	12.8	22.8					
Wt. Ret. on #200 Sieve, gm	157.5	58.9	127.0					
% Gravel	17.6	8.9	9.0					
% Sand	31.5	32.2	41.0					
% Silt & Clay	50.9	58.9	50.0					

Remarks: As an added benefit to our clients, the gravel fraction may be included in this report. Whether or not it is included is dependent upon both the technician's time available and if there is a significant enough amount of gravel. The gravel is always included in the percent retained on the #200 sieve but may not be weighed separately to determine the percentage, especially if there is only a trace amount, (5% or less).

Figure 12

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Very Dark Gray Sandy Fat CLAY	65	27	38			

Project No. 032-470

Client: Haro, Kasunich & Associates

Project: Saratoga-To-The-Sea (S2S) - SCL11622

● Source: 4

Sample No.: 4-1

Elev./Depth: 1.5'

Remarks:

●

LIQUID AND PLASTIC LIMITS TEST REPORT

COOPER TESTING LABORATORY

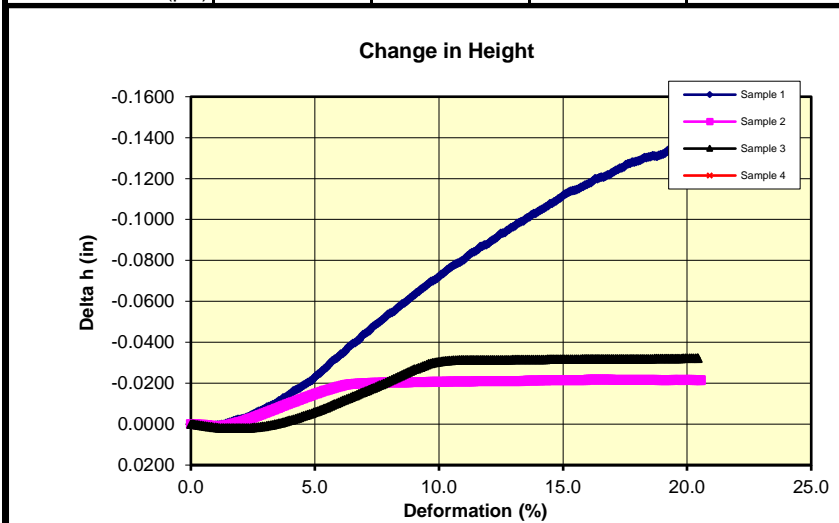
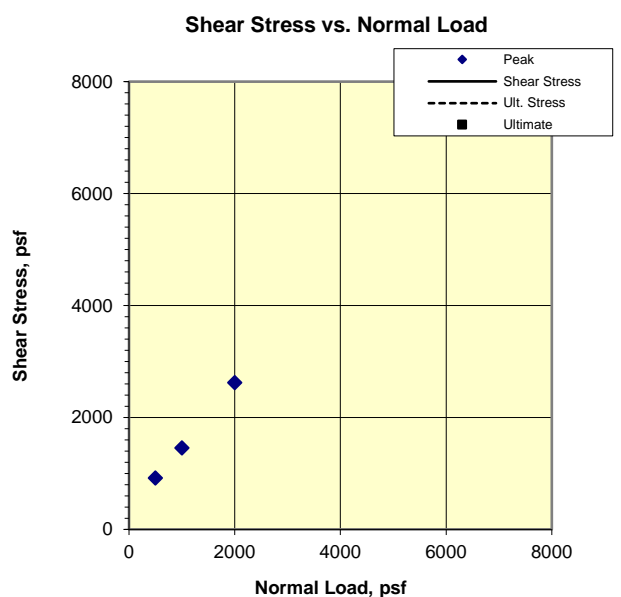
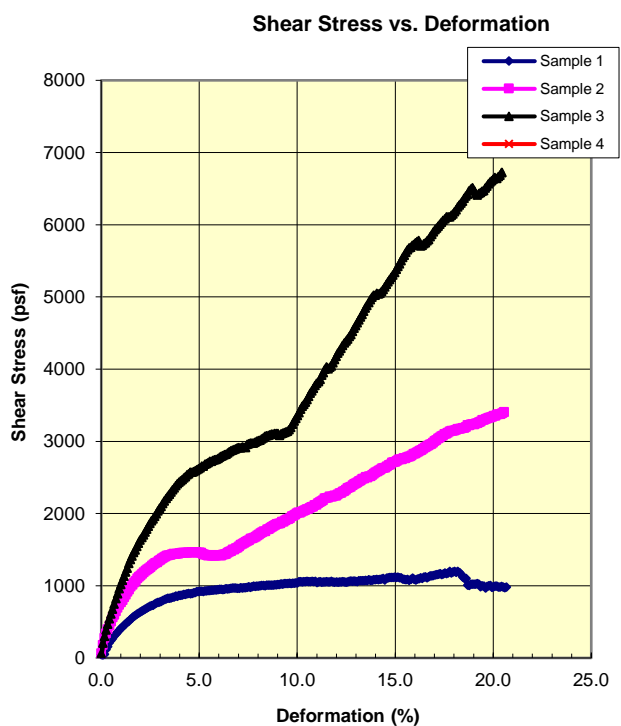
Figure 13

Consolidated Drained Direct Shear (ASTM D3080)

CTL Job #: 032-470 Project #: SCL11622 By: MD
 Client: Haro, Kasunich & Associates Date: 3/18/2019 Checked: PJ
 Project Name: Saratoga-To-The-Sea (S2s) Remolding Info:

Specimen Data			
	1	2	3
Boring:	Hand Tamp 1	Hand Tamp 1	Hand Tamp 1
Sample:			
Depth (ft):	1.5	1.5	1.5
Visual Description:	Reddish Brown Sandy CLAY w/ Gravel	Reddish Brown Sandy CLAY w/ Gravel	Reddish Brown Sandy CLAY w/ Gravel
Normal Load (psf)	500	1000	2000
Dry Mass of Specimen (g)	121.8	120.2	123.2
Initial Height (in)	1.01	1.01	1.01
Initial Diameter (in)	2.42	2.42	2.42
Initial Void Ratio	0.687	0.711	0.676
Initial Moisture (%)	22.9	23.9	22.9
Initial Wet Density (pcf)	122.8	122.1	123.6
Initial Dry Density (pcf)	99.9	98.5	100.6
Initial Saturation (%)	90.0	90.9	91.6
Δ Height Consol (in)	0.0064	0.0124	0.0168
At Test Void Ratio	0.676	0.690	0.648
At Test Moisture (%)	23.8	24.6	23.5
At Test Wet Density (pcf)	124.5	124.3	126.3
At Test Dry Density (pcf)	100.6	99.8	102.3
At Test Saturation (%)	95.0	96.3	97.8
Strain Rate (%/min)	0.01	0.01	0.01
Strengths Picked at	5%	5%	5%
Shear Stress (psf)	920	1455	2622
Δ Height (in) at 5%	-0.0225	-0.0106	-0.0058
Ultimate Stress (psf)			

Phi (deg)	49	Ult. Phi (deg)	
Cohesion (psf)	400	Ult. Cohesion (psf)	



Remarks: Gravel in shear plane on all 3 samples may influence results. Due to the high apparent phi angle, no phi or cohesion is reported. To add phi and cohesion to the report go to the "phi" tab and in cells G30, G31, H30, and H31 enter end points for a line through the 3 data points.

Figure 14

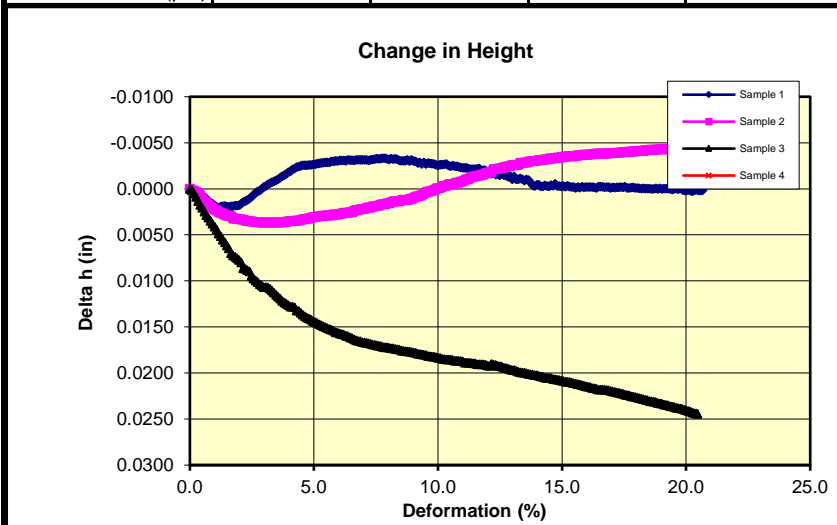
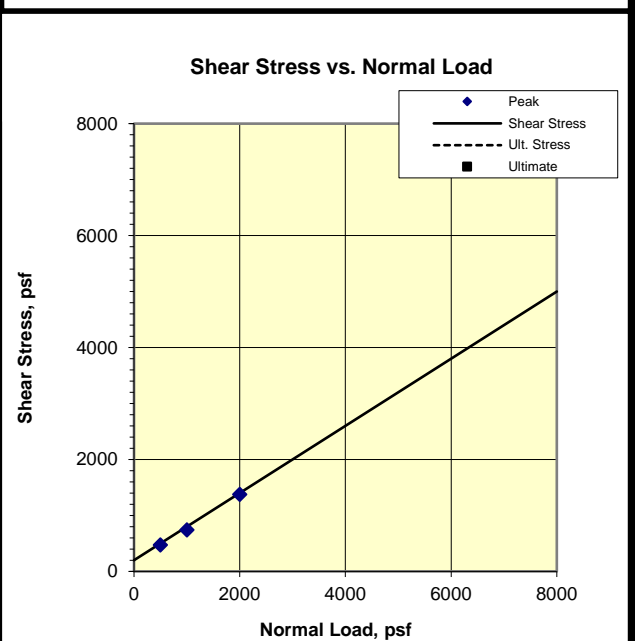
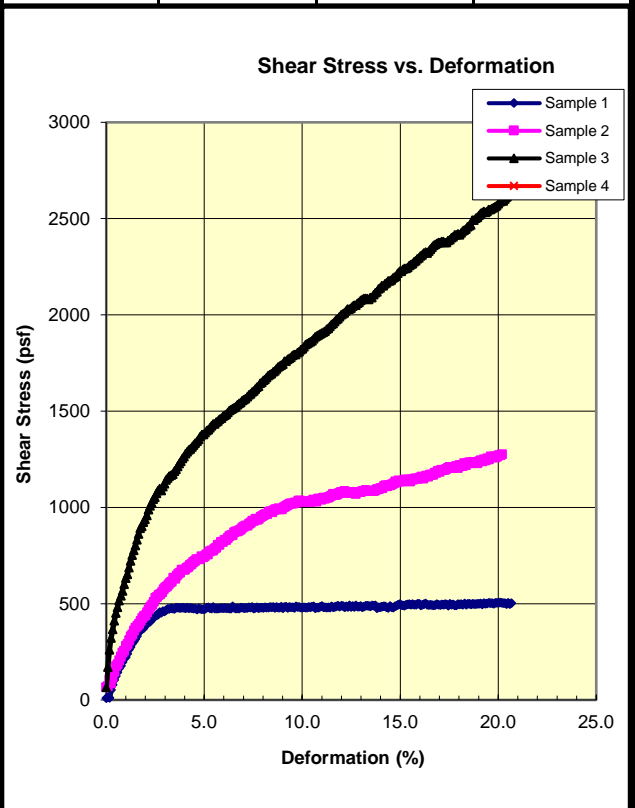


Consolidated Drained Direct Shear (ASTM D3080)

CTL Job #: 032-470	Project #: SCL11622	By: MD
Client: Haro, Kasunich & Associates	Date: 3/19/2019	Checked: PJ
Project Name: Saratoga-To-The-Sea (S2S) Remolding Info:		

Specimen Data				
	1	2	3	4
Boring:	Hand Tamp 2	Hand Tamp 2	Hand Tamp 2	
Sample:				
Depth (ft):				
Visual Description:	Dark Brown Clayey SAND w/ Gravel & organics	Dark Brown Clayey SAND w/ Gravel & organics	Dark Brown Clayey SAND w/ Gravel & organics	
Normal Load (psf)	500	1000	2000	
Dry Mass of Specimen (g)	116.2	112.1	118.0	
Initial Height (in)	1.00	1.02	1.01	
Initial Diameter (in)	2.42	2.42	2.42	
Initial Void Ratio	0.750	0.846	0.749	
Initial Moisture (%)	22.3	23.1	20.3	
Initial Wet Density (pcf)	117.8	112.4	115.9	
Initial Dry Density (pcf)	96.3	91.3	96.4	
Initial Saturation (%)	80.2	73.7	73.0	
ΔHeight Consol (in)	0.0137	0.0167	0.0375	
At Test Void Ratio	0.726	0.816	0.684	
At Test Moisture (%)	23.9	26.8	22.5	
At Test Wet Density (pcf)	121.0	117.7	122.6	
At Test Dry Density (pcf)	97.7	92.8	100.1	
At Test Saturation (%)	88.9	88.5	88.6	
Strain Rate (%/min)	0.01	0.01	0.01	
Strengths Picked at	5%	5%	5%	
Shear Stress (psf)	472	740	1379	
ΔHeight (in) at 5%	-0.0026	0.0031	0.0142	
Ultimate Stress (psf)				

Phi (deg)	31.0	Ult. Phi (deg)	
Cohesion (psf)	200	Ult. Cohesion (psf)	



Remarks: Gravel in shear plane of Sample 3 may influence results.

Figure 15

APPENDIX B: PRELIMINARY PLAN DOCUMENTS

SARATOGA TO SANBORN TRAIL PROJECT
CITY OF SARATOGA
SANTA CLARA COUNTY, CALIFORNIA

PROJECT DESCRIPTION/SCOPE

THE PROPOSED TRAIL INCLUDES THE CONSTRUCTION OF 3 MILES OF RECREATIONAL TRAIL FOR PEDESTRIAN AND EQUESTRIAN USE. APPROXIMATELY 2.7 MILES WILL BE NEW TRAIL CONSTRUCTION AT 4 TO 5 FOOT WIDTH; APPROXIMATELY 0.3 MILES WILL BE ROUTED ALONG AN EXITING OLD OVERGROWN ROAD. THERE WILL BE FOUR WATERCOURSE CROSSINGS, 4 NEW TRAIL BRIDGES (20 TO 70 LINEAR FEET EACH). APPROXIMATELY 955 LINEAR FEET OF LOW (< 3 FOOT HIGH) RETAINING WALLS AND 365 LINEAR FEET OF ROCK FILL BUTTRESS ARE PROPOSED.

CONTACTS

CLIENT
CITY OF SARATOGA
PUBLIC WORKS
13777 FRUITVALE AVE
SARATOGA, CA 95070
CONTACT: EMMA BURKHALTER, PE
(408) 868-1274
eburkhalter@saratoga.ca.us

ENGINEERING GEOLOGIST – PLAN PREPARER
TIMOTHY C BEST, CEG
1002 COLUMBIA STREET
SANTA CRUZ, CA 95060
CONTACT: TIM BEST (timbest@coastgeo.com)
(831) 425-5832 (831) 332 7791 CELL

CIVIL ENGINEER
WATERWAYS CONSULTING, INC.
509A SWIFT STREET
SANTA CRUZ, CA 95060
CONTACT: MATT WELDS, PE
(831) 421-9248 (831) 566-8486 CELL

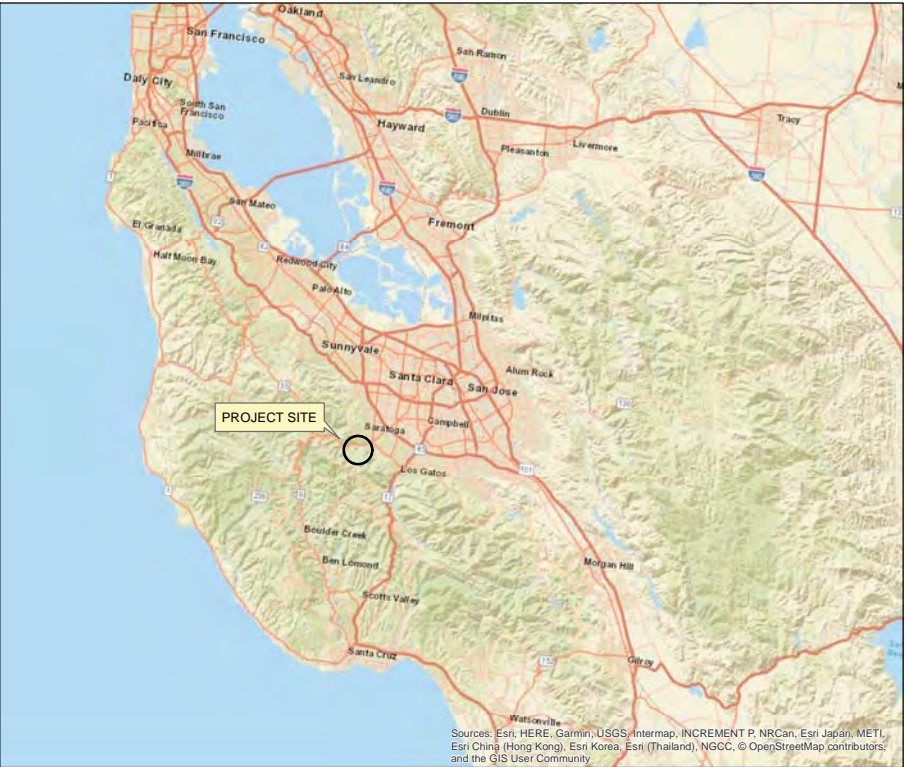
GEOTECHNICAL ENGINEER
HARO, KASUNICH AND ASSOCIATES
116 EAST LAKE AVE
WATSONVILLE, CA 95076
CONTACT: JOHN KASUNICH
(831) 722-4175 (831) 247-5466 CELL

STRUCTURAL ENGINEER
MAYONE STRUCTURAL ENGINEERING, INC.
187-B EL DORADO STREET
MONTEREY, CA 95060
CONTACT: STEVE MAYONE
(831) 372-4455 (831) 402-8579 CELL

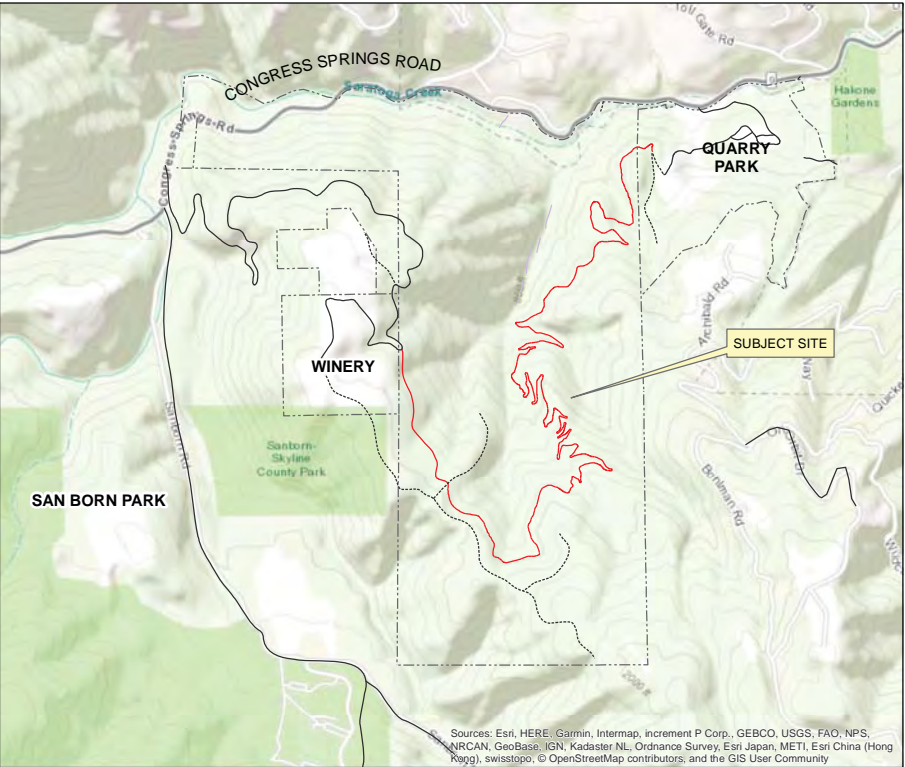
LANDSCAPE PLANNER
PLACEWORKS
1625 SHATTUCK AVENUE, SUITE 300
BERKELEY, CALIFORNIA 94709
CONTACT: JESSE JONES
JJONES@PLACEWORKS.COM
(510)848-3815 EXT. 3336

BIOLOGIST

BRIDGE MANUFACTURE



VICINITY MAP



LOCATION MAP

SHEET INDEX

SHEET	TITLE
C1.0	TITLE SHEET
C2.0	OVERVIEW MAP
C2.1	SITE PLANS 1 OF 5
C2.2	SITE PLANS 2 OF 5
C2.3	SITE PLANS 3 OF 5
C2.4	SITE PLANS 4 OF 5
C2.5	SITE PLANS 5 OF 5
C2.6	TABLE OF CONSTRUCTION
C3.1	BRIDGE 1 SITE PLANS
C3.2	BRIDGE 2 SITE PLANS
C3.3	BRIDGE 3 SITE PLANS
C4.0	TRAILHEAD SHEETS
C5.0	DETAILS 1 OF 5
C5.1	DETAILS 2 OF 5
C5.2	DETAILS 3 OF 5
C5.3	DETAILS 4 OF 5
C5.4	DETAILS 5 OF 5
C5.5	GENERAL NOTES
S1	STRUCTURAL SHEETS
S2	
S3	

APPROXIMATE EARTH WORK QUANTITIES

HILLSLOPE GRADIENT	TRAIL LENGTH FT							
	FILL BENCH	PARTIAL BENCH	CUT BENCH	ROCK FILL BENCH	RETAINING WALL	ROAD TO TRAIL	BRIDGE	TOTAL
0% - 30%	30	2,660	30	55				2,845
30% - 40%	130	1,505	75	60				1,770
40% - 50%	55	3,500	195	130				3,900
50% - 65%		2,670	1,200	50	130			4,050
65% - 75%			770	70	255			1,095
>75%			95		570			665
N/A						1,715	175	1800
TOTAL	215	10,335	2,365	365	955	1,715	175	16,125

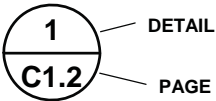
CUT: 2,020 CY
FILL: 2,020 CY
IMPORT ROCK ~100 CY

MAXIMUM FILL: < 6 FEET DEEP
MAXIMUM CUT: < 6 FEET HIGH
DISTURBED AREA: 5.5 ACRES

NOTE: EXCAVATION VOLUMES ARE APPROXIMATE AND MAY DIFFER BASED ON CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

DRAWING NOTATIONS

DETAIL CALL OUT



ABBREVIATIONS

AB	AGGREGATE BASE ROCK
A	ALDER
CB	CUT BENCH
CTR	CENTER
CULV	CULVERT
CY	CUBIC YARD
(E)	EXISTING
EV	ELEVATION
EST	ESTIMATE
F	FIR
FB	FILL BENCH
FL	FLOW LINE
FT	FOOT
G	GROUND
IN	INCH
INV	INVERT
LF	LINEAR FOOT
LWD	LARGE WOODY DEBRIS
M	MADRONE
NTS	NOT TO SCALE
(N)	NEW
O	OAK
PB	PARTIAL BENCH
RFB	ROCK FILL BENCH
RD	ROLLING DIP
RED	ROCK ENERGY DISSIPATOR
R	REDWOOD
RSP	ROCK SLOPE PROTECTION
RW	RETAINING WALL
TOC	TOP OF CUT
TOE	TOE OF SLOPE
TYP	TYPICAL
STA	STATION
SPK	SPIKE

PREPARED AT THE REQUEST OF:
CITY OF SARATOGA
PUBLIC WORKS
13777 FRUITVALE AVE
SARATOGA, CA 95070

TITLE SHEET

65% DESIGN SUBMITAL
SARATOGA TO SANBORN
TRAIL PROJECT

DESIGNED BY: T.C.B.
DRAWN BY: T.C.B.
CHECKED BY: T.C.B.
DATE: 5/2/2019
JOB NO.: X

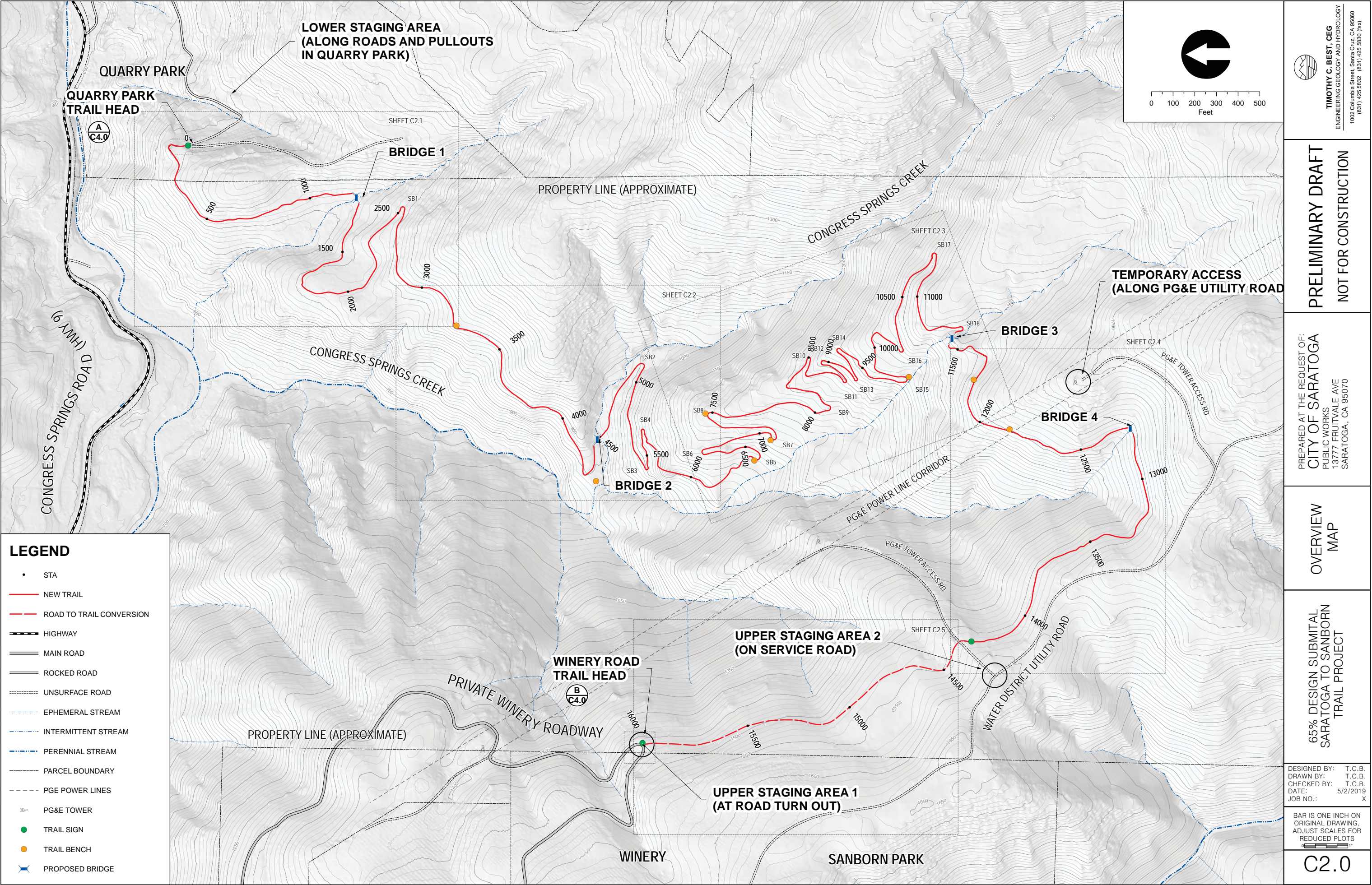
BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS

C1.0



TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY
1002 Columbia Street, Santa Cruz, CA 95060
(831) 425 5832 (831) 425 5830 (fax)

PRELIMINARY DRAFT
NOT FOR CONSTRUCTION





PRELIMINARY DRAFT
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
CITY OF SARATOGA
PUBLIC WORKS
13777 FRUITVALE AVE
SARATOGA, CA 95070

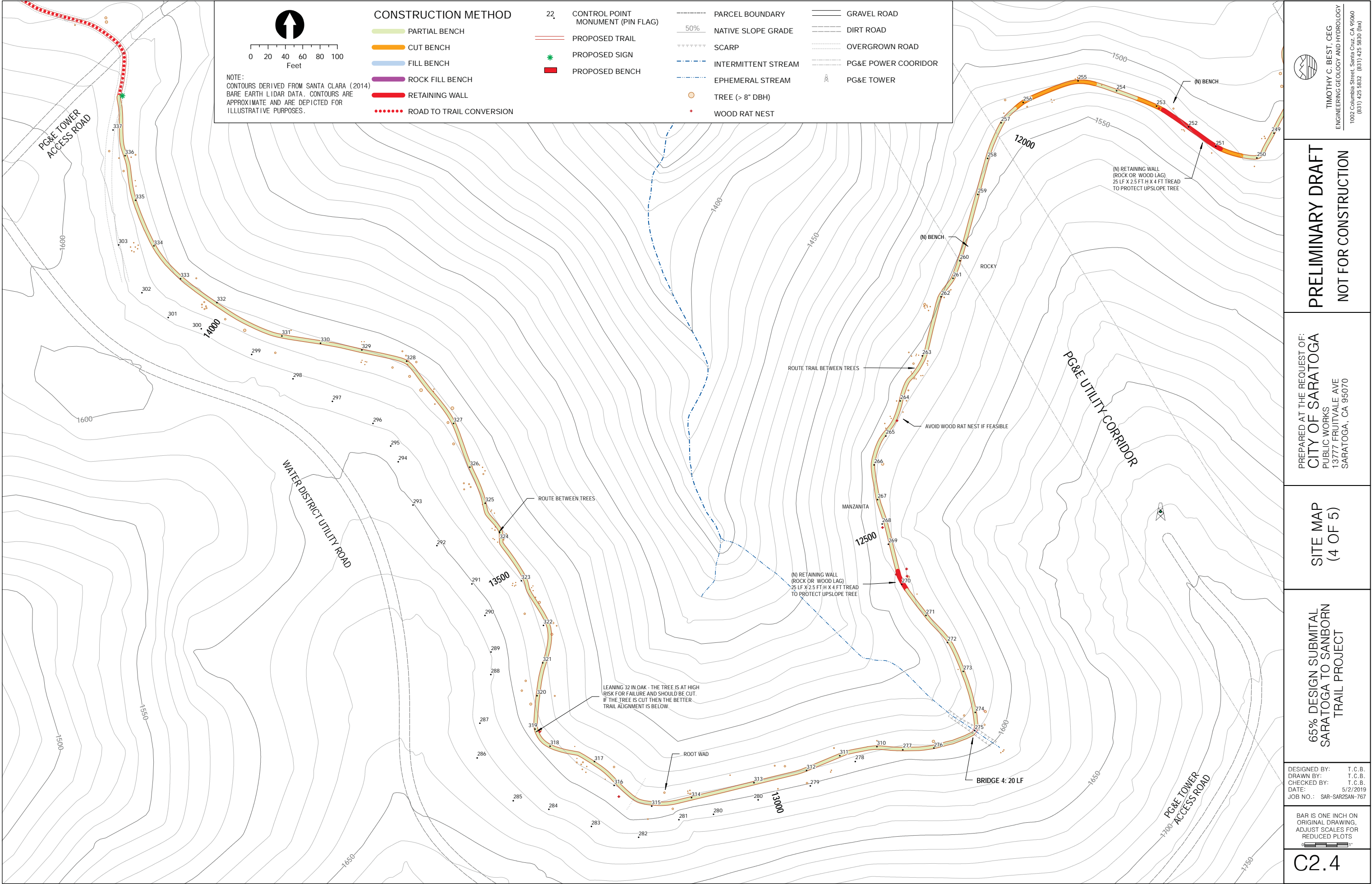
SITE MAP
(2 OF 5)

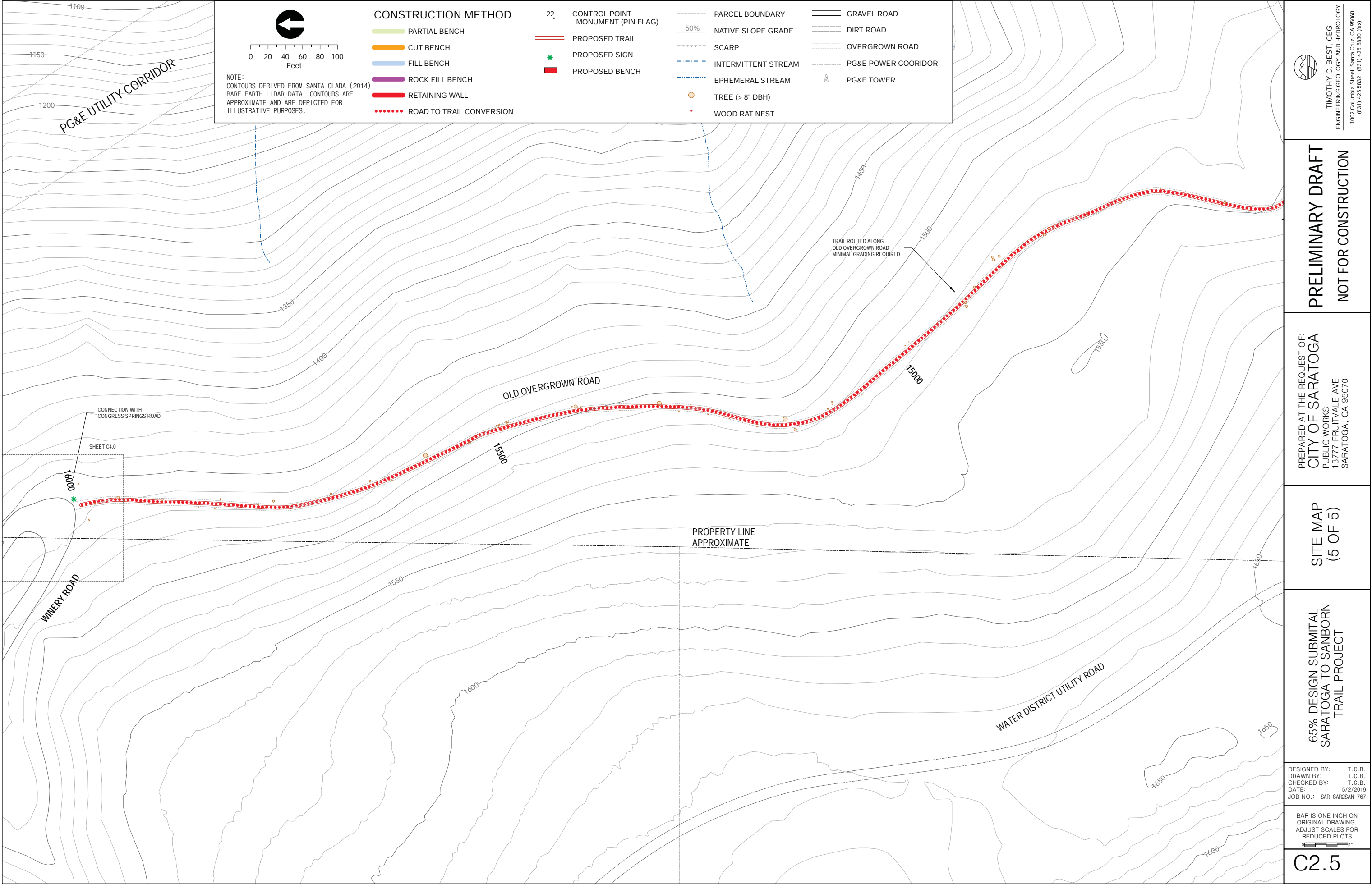
65% DESIGN SUBMITAL
SARATOGA TO SANBORN
TRAIL PROJECT

DESIGNED BY: T.C.B.
DRAWN BY: T.C.B.
CHECKED BY: T.C.B.
DATE: 5/2/2019
JOB NO.: SAR-SAR2SAN-767

BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS

C2.2







TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY
1002 Columbia Street, Santa Cruz, CA 95060
(831) 425 5832 (831) 425 5830 (fax)

PRELIMINARY DRAFT
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
CITY OF SARATOGA
PUBLIC WORKS
13777 FRUITVALE AVE
SARATOGA, CA 95070

SITE MAP
(5 OF 5)

65% DESIGN SUBMITAL
SARATOGA TO SANBORN
TRAIL PROJECT

DESIGNED BY: T.C.B.
DRAWN BY: T.C.B.
CHECKED BY: T.C.B.
DATE: 5/2/2019
JOB NO.: SAR-SAR2SAN-767

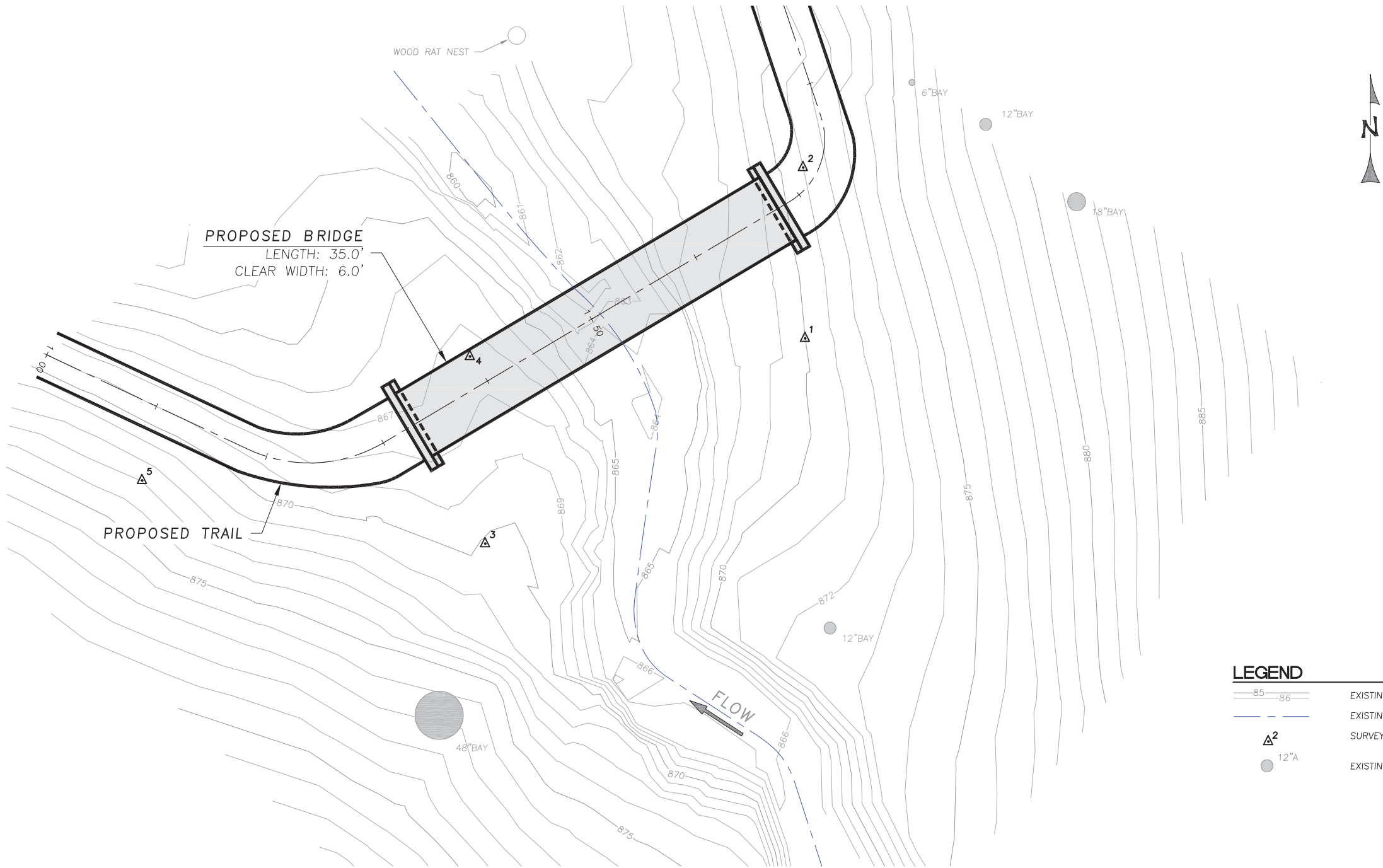
BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS



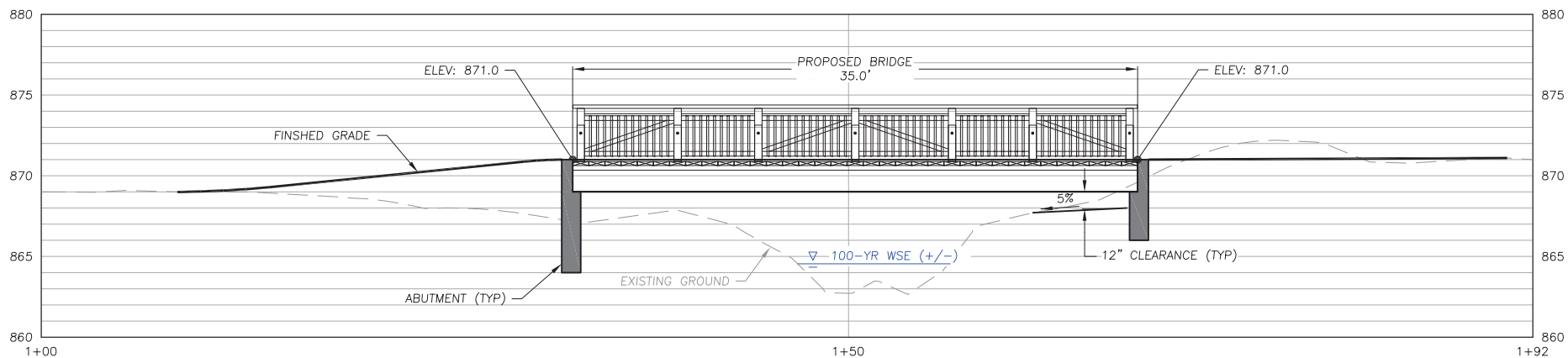
C2.5

STA START	STA END	LENGTH (FT)	SLOPE GRADIENT	APPROX. TRAIL GRADIENT	TRAIL WIDTH	CONSTRUCTION	WALL TYPE	WALL HEIGHT (FT)	COMMENT
0	30	30	30-40%	10	5	FILL BENCH			(N) 35 LF FILL BENCH WITH (N) 18" X 30' HDPE CULVERT BUILD UP TRAIL ON COMPACTED FILL TO RAMP UP OVER OLD ROAD CUT. EST. 3' D. 10 CY. USE APPROVED FILL FROM ADJACENT CUTS. (N) 18" X 20' DITCH RELIEF CULVERT SLOPE AT 5% CLEAN (E) DITCH, 75 LF. DRAIN TO CULVERT
30	40	10	40-50%	10	5	PARTIAL BENCH			
40	55	15	40-50%	10	5	CUT BENCH			
55	110	65	0-30%	10	5	PARTIAL BENCH			
110	155	45	50-65%	2	4	CUT BENCH			
155	165	10	40-50%	2	4.5	FILL BENCH			(N) 18" X 25' HDPE CULVERT AT DRY SWALE. PLACE PIPE AT NATIVE GRADE (45% +/-) CONSTRUCT TRAIL ON 15 CY OF FILL. KEY AND BENCH FILL PER STANDARD SPECIFICATIONS. FILL CAN BE OBTAINED FROM FULL BENCH CONSTRUCTION ON ADJACENT SEGMENTS OF TRAIL.
165	335	170	40-50%	12	4.5	PARTIAL BENCH			
335	380	45	65-75%	4	4	CUT BENCH			
380	430	50	40-50%	2	4.5	PARTIAL BENCH			
430	460	30	65-75%	5	4	RETAINING WALL	WOOD LAG	2.5	(N) WOOD LAG RETAINING WALL. 30 LF X 2.5 FT H. 4 FT TREAD. CONSTRUCT TO PROTECT UPSLOPE 24 IN BAY
460	520	60	65-75%	5	4	CUT BENCH			
520	570	50	65-75%	0	4	CUT BENCH			
570	720	150	50-65%	4	4	PARTIAL BENCH			
720	800	80	40-50%	2	4.5	PARTIAL BENCH			
800	865	65	30-40%	7	4.5	PARTIAL BENCH			
865	1030	165	0-30%	2	5	PARTIAL BENCH			EROSION AND SEDIMENTATION CAUSED BY OVERLAND FLOW ORIGINATING FROM POOR DRAINAGE ON UPSLOPE QUARRY ROAD. CORRECT DRAINAGE ON UPPER ROAD.
1030	1105	75	0-30%	2	5	PARTIAL BENCH			
1105	1210	105	30-40%	4	4.5	PARTIAL BENCH			
1210	1245	35		4		BRIDGE			BRIDGE 1
1245	1265	14	30-40%	5	4.5	FILL BENCH			
1265	1295	30	50-65%	10	4	PARTIAL BENCH			
1295	1405	110	40-50%	6	4.5	PARTIAL BENCH			
1405	1450	45	50-65%	8	4	PARTIAL BENCH			
1450	1495	45	40-50%	6	4.5	PARTIAL BENCH			
1495	1635	140	30-40%	8	4.5	PARTIAL BENCH			
1635	1655	20	40-50%	7	4.5	PARTIAL BENCH			
1655	1685	30	50-65%	7	4	PARTIAL BENCH			
1685	1740	55	40-50%	8	4.5	PARTIAL BENCH			
1740	1890	150	0-30%	10	5	PARTIAL BENCH			
1890	2005	115	0-30%	4	5	PARTIAL BENCH			
2005	2250	245	30-40%	5	4.5	PARTIAL BENCH			
2250	2305	55	0-30%	8	5	PARTIAL BENCH			
2305	2410	105	30-40%	8	4.5	PARTIAL BENCH			
2410	2515	105	40-50%	9	4.5	PARTIAL BENCH			
2515	2545	30	30-40%	10	4.5	FILL BENCH			SWITCHBACK #1 10' RADIUS, 10% TRAIL GRADE, 35% CROSS-SLOPE DOWNSLOPE LEG: 30 LF FILL BENCH, 2 FT +/- THICK, 4 CY UPSLOPE LEG: 30 LF CUT BENCH, 3 FT +/- HIGH FIELD FIT AS DIRECTED BY ENGINEER
2545	2565	20	30-40%	0.25	4.5	CUT BENCH			
2565	2630	65	>75%	15	4	RETAINING WALL	ROCK	2.5	(N) ROCK RW OR (N) ROCK FILL BENCH 55 LF X 2.5 FT H X 4 FT TREAD TRAIL TRAVERSES 65% TO 80% SIDE SLOPES. CONSTRUCT RETAINING WALL OR ROCK FILL BENCH TO MINIMIZE CUT. IMPORT ROCK FOR CONSTRUCTION OF ROCK RETAINING WALL (EST 8 CY), FOR ROCK BUTTRESS, SUITABLE ROCK MAY BE FOUND ALONG NEARBY TRAIL SEGMENTS. ENGINEER TO VERIFY AT TIME OF CONSTRUCTION.
2630	2780	150	50-65%	9	4	CUT BENCH			
2780	2815	35	65-75%	6	4	CUT BENCH			
2815	2910	95	50-65%	9	4	PARTIAL BENCH			
2910	3005	95	40-50%	10	4.5	PARTIAL BENCH			
3005	3175	170	50-65%	4	4	PARTIAL BENCH			
3175	3250	75	40-50%	7	4.5	PARTIAL BENCH			
3250	3320	70	0-30%	10	5	PARTIAL BENCH			
3320	3440	120	40-50%	10	4.5	PARTIAL BENCH			
3440	3635	195	50-65%	11	4	PARTIAL BENCH			
3635	3725	90	65-75%	10	4	CUT BENCH			
3725	3755	30	65-75%	10	4	RETAINING WALL	ROCK	2.5	(N) ROCK RETAINING WALL 30 LF X 2.5 FT H X 4 FT TREAD CONSTRUCT TO AVOID UNDERCUTTING UPSLOPE GROUP OF BAY TREES
3755	3850	95	65-75%	10	4	CUT BENCH			
3850	4050	200	>75%	10	4	RETAINING WALL	ROCK	2.5	(N) RETAINING WALL (ROCK OR WOOD LAG) 200 LF X 2.5 FT H X 4 FT TREAD ROCK RETAINING WALL PREFERRED IF ROCK IS AVAILABLE NEARBY AVOID UNDERCUTTING NEARBY 36" BAY
4050	4120	70	50-65%	10	4	CUT BENCH			
4120	4190	70	65-75%	12	4	ROCK FILL BENCH	ROCK BUTT	4	(N) 70 LF ROCK FILL BENCH TRAIL ROUTED BELOW ROCKY OUTCROP. USE ONSITE ROCK TO SUPPORT TRAIL TREAD. ADJACENT BAY TREES MAY BE CUT AS NEEDED.
4190	4235	45	50-65%	9	4	CUT BENCH			
4235	4305	70	40-50%	6	4.5	PARTIAL BENCH			
4305	4330	25	40-50%	6	4.5	PARTIAL BENCH			
4330	4451	121	0-30%	13	5	PARTIAL BENCH			
4451	4521	70	0-30%	15	5	BRIDGE			BRIDGE 2
4521	4521	0	0-30%	15	5	PARTIAL BENCH			
4521	4920	399	0-30%	15	5	PARTIAL BENCH			
4920	4935	15	0-30%	8	5	FILL BENCH			
4935	4960	25	65-75%	8	4	CUT BENCH			
4960	5185	225	>75%	9	4	RETAINING WALL	ROCK	30	(N) RETAINING WALL (WOOD LAG, ROCK, OR WOOD CRIB) 225 LF X 2.5 FT H X 4' W TREAD, 80% CROSS SLOPE
5185	5220	35	65-75%	8	4	CUT BENCH			
5220	5270	50	65-75%	3	4	RETAINING WALL	ROCK	2.5	(N) RETAINING WALL (WOOD LAG, ROCK, OR WOOD CRIB) 50 LF X 2.5 FT H X 4' W TREAD, 75% CROSS SLOPE. CONSTRUCT TO MINIMIZE CUT INTO UNSTABLE SLOPE ABOVE.
5270	5315	45	65-75%	8	4	CUT BENCH			
5315	5390	75	40-50%	10	4.5	PARTIAL BENCH			
5390	5430	40	50-65%	10	4.5	RETAINING WALL	ALLEN BLOCK	4	SWITCHBACK #3 7' RADIUS, 10% TRAIL GRADE, 60% CROSS-SLOPE DOWNSLOPE LEG: 40 LF ALLEN BLOCK OR ROCK WALL, 4 FT H (MAX) COVER WITH LANDSCAPE FILL, EST 18 CY UPSLOPE LEG: 40+ LF CUT BENCH, 7 FT +/- HIGH CUT, EST 18 CY FIELD FIT AS DIRECTED BY ENGINEER
5430	5470	40	50-65%	12	4.5	CUT BENCH		7	
5470	5520	50	40-50%	11	4.5	PARTIAL BENCH			
5520	5565	45	50-65%	10	4	CUT BENCH			
5565	5585	20	50-65%	15	4	RETAINING WALL	WOOD LAG	2	(N) RETAINING WALL 20 LF X 2 FT H X 4 FT TREAD ACROSS OLD SLIDE SCAR PROTECT ADJACENT 12" MADRONE
5585	5600	15	40-50%	15	4.5	PARTIAL BENCH			
5600	5630	30	40-50%	10	4.5	ROCK FILL BENCH	ROCK BUTT	3	SWITCHBACK #4 7' RADIUS, 10% TRAIL GRADE, 50% CROSS-SLOPE DOWNSLOPE LEG: 30 LF ROCK FILL BENCH, 3 FT H (MAX), EST 11 CY UPSLOPE LEG: 40+ LF CUT BENCH, 5 FT +/- HIGH CUT, EST 11 CY FIELD FIT AS DIRECTED BY ENGINEER
5630	5660	30	40-50%	10	4.5	CUT BENCH			
5660	5800	140	40-50%	7	4.5	PARTIAL BENCH			
5800	5835	35	>75%	10	4	CUT BENCH			
5835	5865	30	65-75%	14	4	CUT BENCH			

STA START	STA END	LENGTH (FT)	SLOPE GRADIENT	APPROX. TRAIL GRADIENT	TRAIL WIDTH	CONSTRUCTION	WALL TYPE	WALL HEIGHT (FT)	COMMENT
5865	5925	60	>75%	3	4	CUT BENCH			35 LF OF TRAIL CONSTRUCTED ACROSS STEEP 75% GRADIENT ROCKY SLOPES. CUT BENCH IS REASONABLE (N) RETAINING WALL (ROCK, WOOD LAG, OR WOOD CRIB). 12 LF X 2.5 FT H X 4 FT TREAD. ROCK RETAINING WALL PREFERRED IF ROCK IS AVAILABLE NEARBY. INSTALL SILT FENCE BELOW TRAIL TO CONTAIN DEBRIS THAT MAY FAIL DURING CONSTRUCTION. MINIMIZE CUT TO AVOID UNDERCUTTING UPSLOPE TREES. CLAYEY SOILS.
5925	6045	120	65-75%	10	4	RETAINING WALL	ROCK	2.5	TRAIL ROUTED UP BENCH AT 15% GRADE.
6045	6360	315	0-30%	14	5	PARTIAL BENCH			SWITCHBACK #5 17' RADIUS, 10% TRAIL GRADE, 20% CROSS-SLOPE PARTIAL BENCH CONSTRUCTION FIELD FIT AS DIRECTED BY ENGINEER
6360	6400	40	0-30%	10	5	PARTIAL BENCH			
6400	6440	40	0-30%	10	5	PARTIAL BENCH			
6440	6460	20	0-30%	9	5	PARTIAL BENCH			
6460	6555	105	30-40%	4	4.5	PARTIAL BENCH			
6555	6620	55	0-30%	3	5	PARTIAL BENCH			
6620	6680	60	30-40%	3	4.5	PARTIAL BENCH			
6680	6715	35	0-30%	10	5	PARTIAL BENCH			SWITCHBACK #6 12' RADIUS, 10% TRAIL GRADE, 25% CROSS-SLOPE PARTIAL BENCH CONSTRUCTION FIELD FIT AS DIRECTED BY ENGINEER
6715	6750	35	0-30%	10	5	PARTIAL BENCH			
6750	6850	100	30-40%	10	4.5	PARTIAL BENCH			
6850	7030	180	40-50%	6	4.5	PARTIAL BENCH			
7030	7060	30	30-40%	10	4.5	PARTIAL BENCH			
7060	7090	30	30-40%	11	4.5	FILL BENCH			SWITCHBACK #7 12' RADIUS, 10% TRAIL GRADE, 30% CROSS-SLOPE DOWNSLOPE LEG: 30 LF FILL BENCH, 2 FT H, EST 4 CY UPSLOPE LEG: 30+ LF CUT BENCH, 2 FT +/- HIGH CUT, EST 4 CY FIELD FIT AS DIRECTED BY ENGINEER
7090	7120	30	30-40%	11	4.5	CUT BENCH			
7120	7180	60	30-40%	8	4.5	PARTIAL BENCH			
7180	7215	35	40-50%	8	4.5	PARTIAL BENCH			
7215	7240	25	65-75%	8	4	CUT BENCH			ROUTE TRAIL PAST FALLEN TREE. REMOVE ROOT WAD
7240	7420	180	50-65%	0	4	PARTIAL BENCH			
7420	7455	35	30-40%	8	4.5	PARTIAL BENCH			
7455	7480	25	30-40%	9	4.5	FILL BENCH			SWITCHBACK #8 13' RADIUS, 9% TRAIL GRADE, 25% CROSS-SLOPE DOWNSLOPE LEG: 30 LF FILL BENCH, 1.5 FT H, EST 3 CY UPSLOPE LEG: 30+ LF CUT BENCH, 2 FT +/- HIGH CUT, EST 3 CY FIELD FIT AS DIRECTED BY ENGINEER
7480	7505	25	30-40%	9	4.5	CUT BENCH			VERY ROCKY GROUND. TREAD LIKELY TO BE SUPPORTED ON ROCK FILL BENCH
7505	7580	75	30-40%	10	4.5	PARTIAL BENCH			
7580	7790	210	50-65%	7	4	PARTIAL BENCH			
7790	7860	70	40-50%	9	4.5	PARTIAL BENCH			
7860	7995	135	30-40%	7	4.5	PARTIAL BENCH			
7995	8080	85	0-30%	10	5	PARTIAL BENCH			
8080	8140	60	0-30%	10	5	PARTIAL BENCH			SWITCHBACK #9 12' RADIUS, 10% TRAIL GRADE, 20% CROSS-SLOPE PARTIAL BENCH CONSTRUCTION FIELD FIT AS DIRECTED BY ENGINEER INSTALL BENCH AS DIRECTED AND PER STANDARD SPECIFICATIONS
8140	8180	40	0-30%	2	5	PARTIAL BENCH			
8180	8290	110	40-50%	11	4.5	PARTIAL BENCH			
8290	8350	60	30-40%	3	4.5	ROCK FILL BENCH	ROCK BUTT	2	TRAIL WRAPS AROUND ROCKY BEDROCK NOSE. LIKELY ROCK FILL CONSTRUCTION
8350	8380	30	50-65%	8	4	ROCK FILL BENCH	ROCK BUTT	3	(N) ROCK FILL 30 LF X 3 FT HIGH X 4 FT W ABUNDANT ROCK EXPOSED IN CUT
8380	8465	85	50-65%	9	4	CUT BENCH			
8465	8500	35	40-50%	10	4.5	ROCK FILL BENCH	ROCK BUTT	3	SWITCHBACK #10 8' RADIUS, 10% TRAIL GRADE, 45% CROSS-SLOPE ROUTE BETWEEN TREES DOWNSLOPE LEG: 35 LF FILL BENCH, 3 FT H, EST 7 CY UPSLOPE LEG: 30+ LF CUT BENCH, 4.5 FT +/- HIGH CUT, EST 7 CY FIELD FIT AS DIRECTED BY ENGINEER
8500	8530	30	40-50%	10	4.5	CUT BENCH			
8530	8570	40	50-65%	7	4	PARTIAL BENCH			
8570	8600	30	30-40%	8	4.5	PARTIAL BENCH			
8600	8670	70	30-40%	0	4.5	PARTIAL BENCH			
8670	8710	40	40-50%	5	4.5	PARTIAL BENCH			
8710	8770	60	50-65%	9	4	PARTIAL BENCH			
8770	8800	30	40-50%	10	4.5	ROCK FILL BENCH	ROCK BUTT	2.5	SWITCHBACK #11 8' RADIUS, 10% TRAIL GRADE, 40% CROSS-SLOPE ROUTE AROUND TREES DOWNSLOPE LEG: 35 LF FILL ROCK FILL BENCH, 2.5 FT H, EST 6 CY UPSLOPE LEG: 30+ LF CUT BENCH, 3.5 FT +/- HIGH CUT FIELD FIT AS DIRECTED BY ENGINEER
8800	8820	20	40-50%	10	4.5	CUT BENCH			
8820	8885	65	50-65%	4	5	CUT BENCH			
8885	8945	60	50-65%	4		PARTIAL BENCH			
8945	8965	20	0-30%	5		PARTIAL BENCH			
8965	8980	15	0-30%	9	5	FILL BENCH			
8980	8995	15	0-30%	9	5	CUT BENCH			
8995	9120	125	50-65%	8	4	CUT BENCH			
9120	9165	45	50-65%	10	4	RETAINING WALL	ALLEN	4.4	SWITCHBACK #13 7' RADIUS, 10% TRAIL GRADE, 65% CROSS-SLOPE DOWNSLOPE LEG: 45 LF ALLEN BLOCK WALL, 4.6 FT H (MAX) COVER WITH LANDSCAPE FILL, EST 24 CY UPSLOPE LEG: 50+ LF CUT BENCH, 8.5 FT +/- HIGH CUT, EST 24 CY FIELD FIT AS DIRECTED BY ENGINEER
9165	9215	50	50-65%	10	4	CUT BENCH			
9215	9325	110	50-65%	10	4	CUT BENCH			
9325	9345	20	0-30%	10	5	ROCK FILL BENCH	ROCK BUTT	1.5	SWITCHBACK #14 8' RADIUS, 10% TRAIL GRADE, 30% ROCKY RIDGE DOWNSLOPE LEG: 25 LF FILL, 1.5 FT H (MAX), EST 1.5 CY UPSLOPE LEG: 15+ LF CUT BENCH, 2 FT +/- HIGH CUT FIELD FIT AS DIRECTED BY ENGINEER
9345	9360	15	0-30%	10	5	CUT BENCH			
9360	9370	10	0-30%	10	5	PARTIAL BENCH			
9370	9475	105	50-65%	12	4	PARTIAL BENCH			



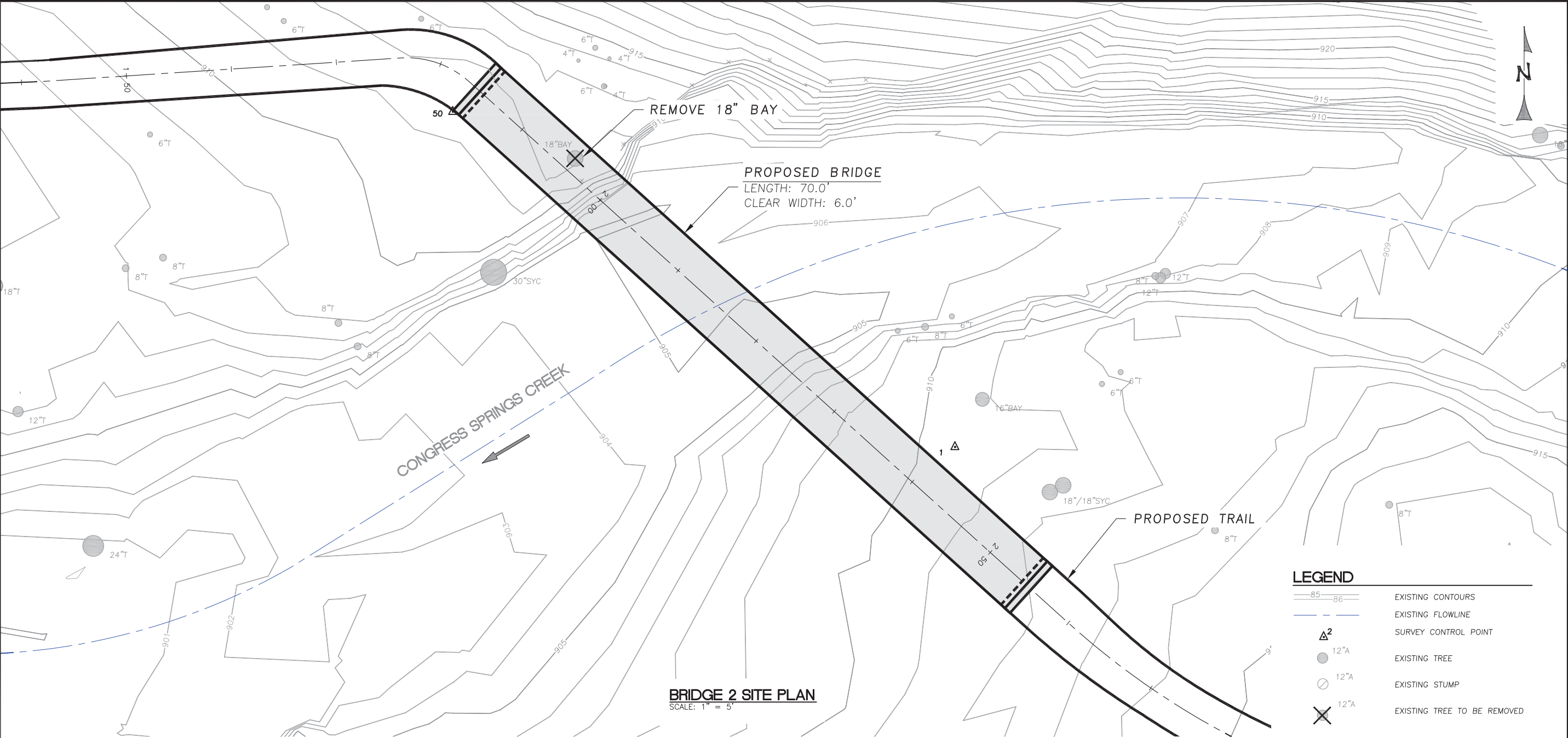
BRIDGE 1 SITE PLAN
SCALE: 1" = 5'



BRIDGE 1 PROFILE
SCALE: 1" = 5'

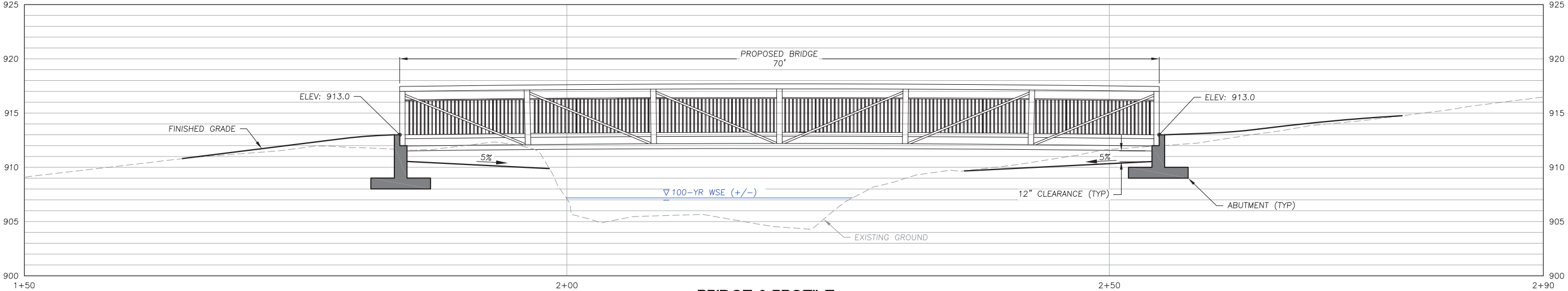
LEGEND

- EXISTING CONTOURS
- EXISTING FLOWLINE
- SURVEY CONTROL POINT
- EXISTING TREE



BRIDGE 2 SITE PLAN
SCALE: 1" = 5'

- LEGEND**
- EXISTING CONTOURS
 - EXISTING FLOWLINE
 - SURVEY CONTROL POINT
 - EXISTING TREE
 - EXISTING STUMP
 - EXISTING TREE TO BE REMOVED



BRIDGE 2 PROFILE
SCALE: 1" = 5'

WATERWAYS

CONSULTING INC.

TIMOTHY C. BEST, CEG

ENGINEERING, GEOLOGY AND HYDROLOGY

1002 COLUMBIA STREET, SANTA CRUZ, CA 95060

(831) 425-3622 (831) 425-3623 FAX

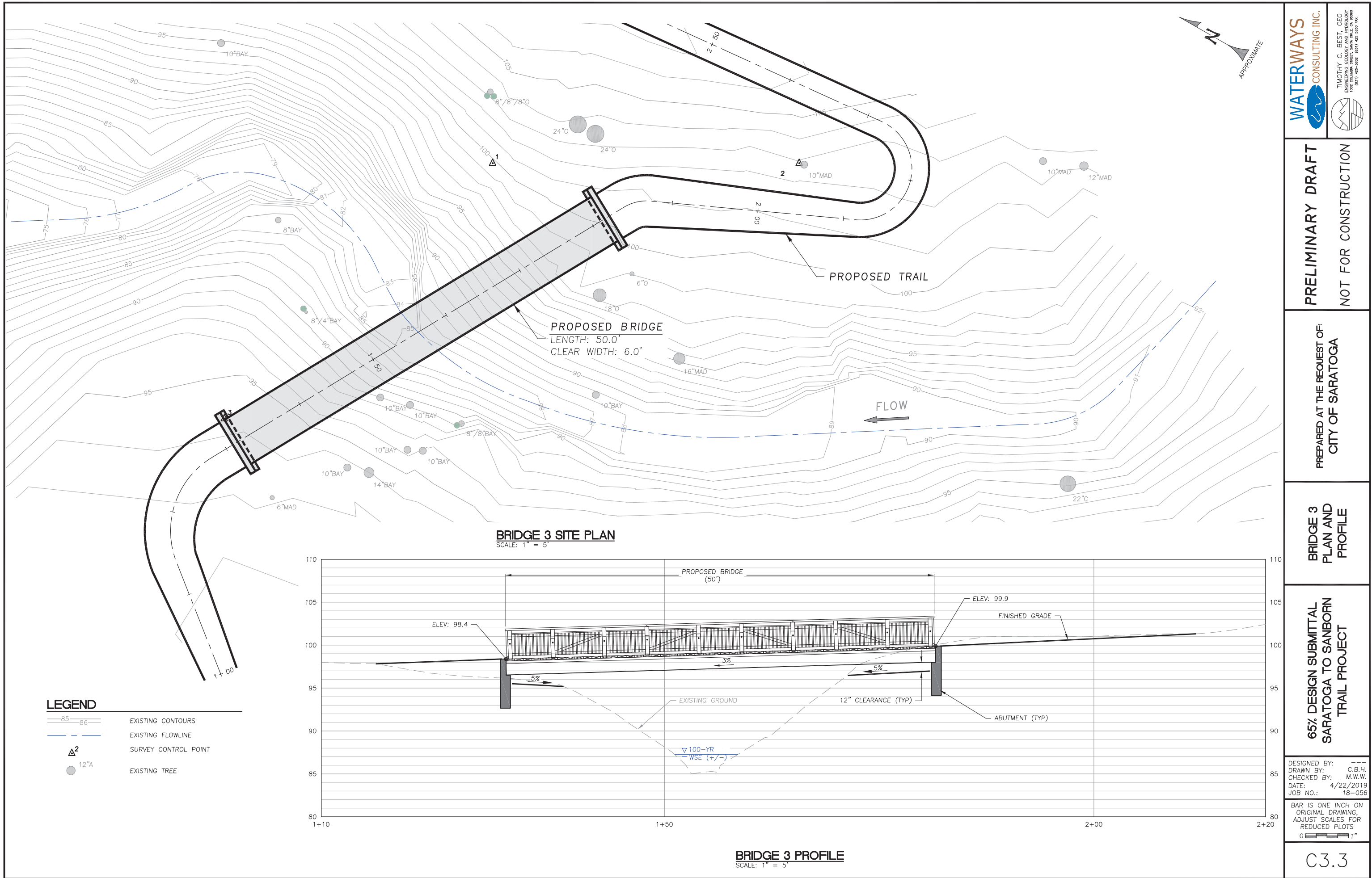
PRELIMINARY DRAFT
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
CITY OF SARATOGA

BRIDGE 2
PLAN AND
PROFILE

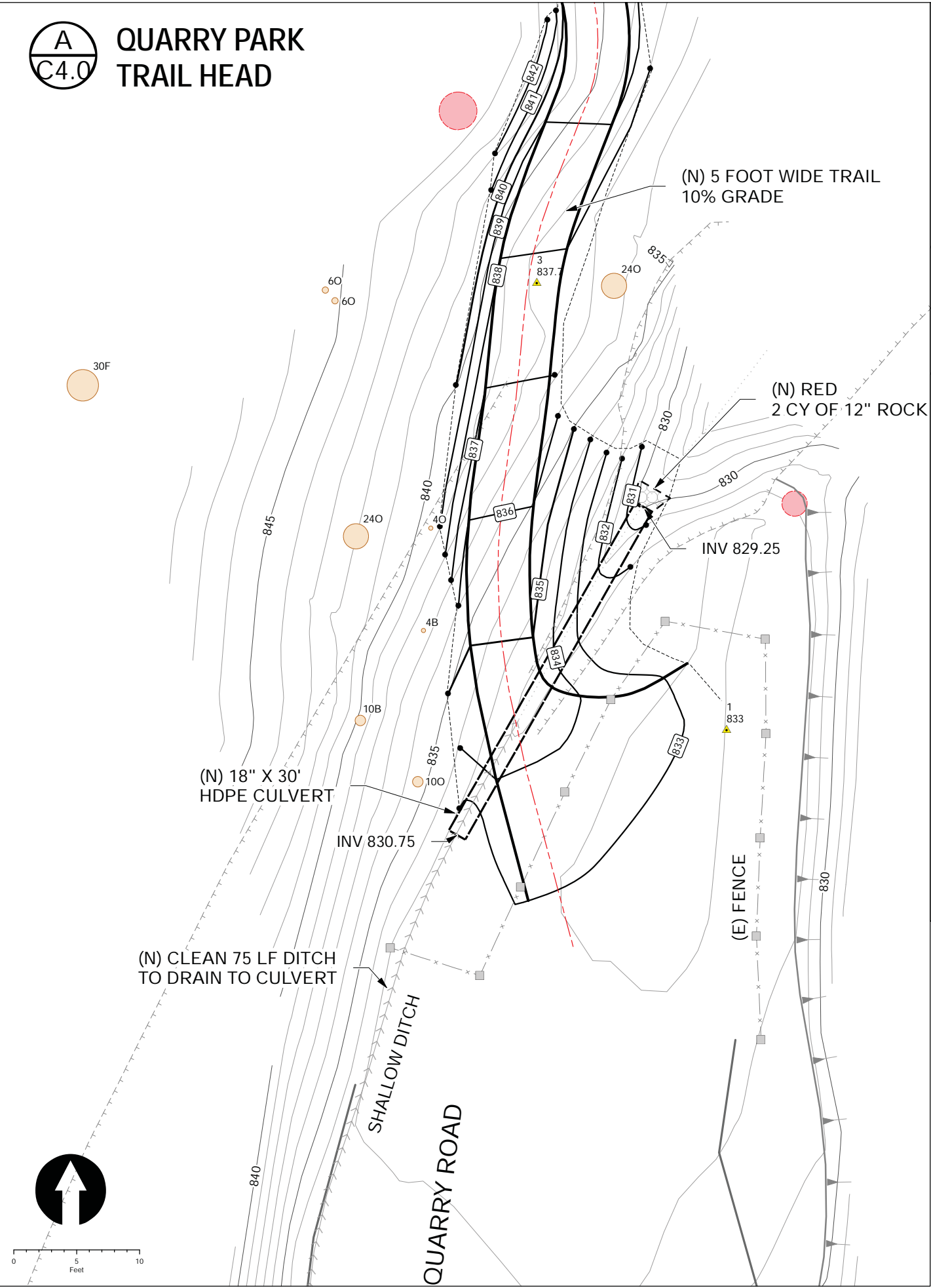
65% DESIGN SUBMITTAL
SARATOGA TO SANBORN
TRAIL PROJECT

DESIGNED BY: C.B.H.
DRAWN BY: M.W.W.
CHECKED BY: 4/22/2019
DATE: 18-056
JOB NO.:
BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS



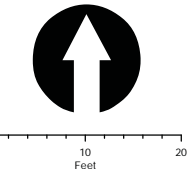
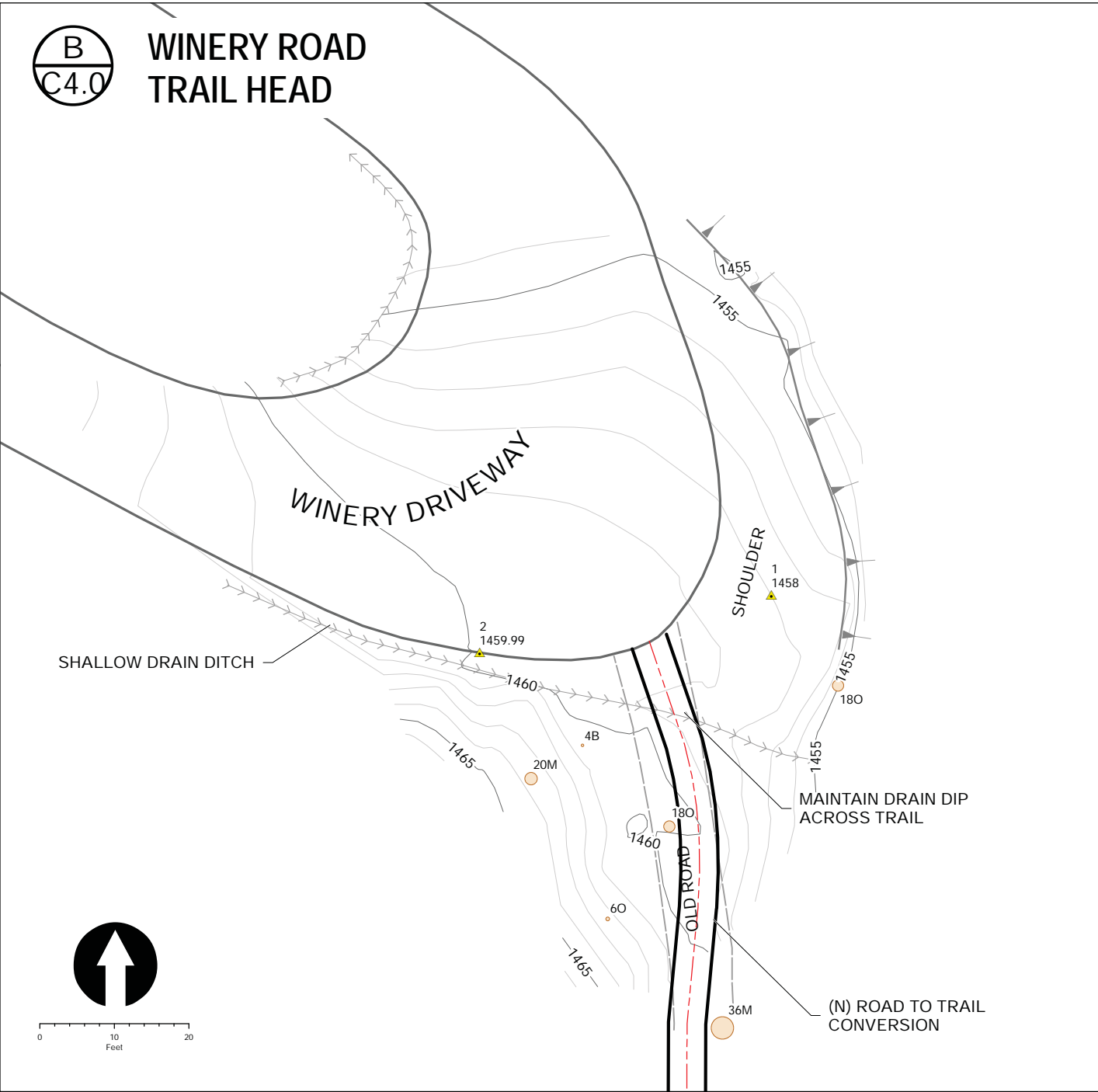
A
C4.0

QUARRY PARK
TRAIL HEAD



B
C4.0

WINERY ROAD
TRAIL HEAD



- Legend
- | | | |
|----------------|----------------------------|--------------|
| EO_OLD_ROAD | CL | (E) CONTOUR |
| EDGE OF ROAD | LIMIT OF GROUND DIS | INDX |
| FENCE | (N) EDGE OF TRAIL | INT |
| TOP OF FILL | (N) ROCK ENERGY DISSIPATER | (N) CONTOURS |
| DITCH | (N) CULVERT | INDEX |
| ESCARPMENT | | INT |
| SWALE | | |
| POST | | |
| TREE | | |
| WOOD RAT NESTS | | |



TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY
1002 Columbia Street, Santa Cruz, CA 95060
(831) 425 5832 (831) 425 5830 (fax)

PRELIMINARY DRAFT
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
CITY OF SARATOGA
PUBLIC WORKS
13777 FRUITVALE AVE
SARATOGA, CA 95070

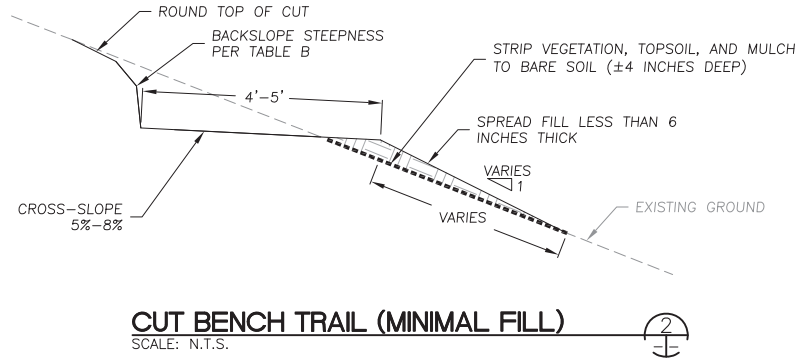
TRAILHEAD
MAP

65% DESIGN SUBMITAL
SARATOGA TO SANBORN
TRAIL PROJECT

DESIGNED BY: T.C.B.
DRAWN BY: T.C.B.
CHECKED BY: T.C.B.
DATE: 5/2/2019
JOB NO.: X

BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS

C4.0



NOTES:

- TRAIL SHALL BE CONSTRUCTED AT THE FOLLOWING WIDTHS, UNLESS OTHERWISE SPECIFIED.

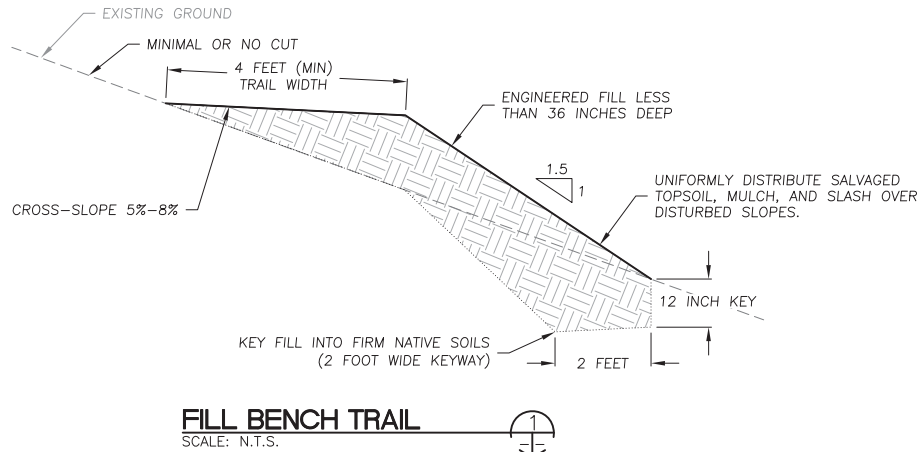
TABLE A

NATIVE CROSS-SLOPE	TOTAL WIDTH (FEET)	CUT WIDTH (FEET)	FILL WIDTH (FEET)
0-50%	5.0	4.0	1.0
50-65%	4.5	4.0	0.5
>65%	4.0	3.5	0.5

- TRAIL SHALL BE CONSTRUCTED ON CUT BENCH WITH FILL BROADCASTED AND COMPACTED BELOW THE TRAIL TO A DEPTH OF LESS THAN 6 INCHES.
- AREAS TO RECEIVE BROADCAST FILL SHALL BE STRIPPED OF VEGETATION AND HIGHLY ORGANIC SOIL (~ 4 IN. DEPTH).
- ANY STRUCTURAL FILL SHALL BE COMPACTED TO 85% RELATIVE COMPACTION UNLESS OTHERWISE DIRECTED OR SPECIFIED BY THE ENGINEER.
- BACKSLOPE SHALL BE INCLINED PER TABLE B. WHERE CUTS ARE STEEPER THAN 6 FEET OR WHERE SEEPAGE OF WATER OR UNSUITABLE EARTH MATERIALS ARE ENCOUNTERED, THE BACKSLOPE SHALL BE SELECTED BY THE ENGINEER. WHERE CUT SLOPE INCLINATIONS RESULT IN EXTENSIVE GRADING AND IF INCREASED TRAIL MAINTENANCE IS ACCEPTABLE TO THE OWNER, NEW CUTSLOPES CAN BE CONSTRUCTED AT STEEPER INCLINATION SUBJECT TO APPROVAL OF THE ENGINEER.
- DISTURBED AREAS OUTSIDE TRAIL TREAD SHALL BE TREATED TO CONTROL EROSION PER SPECIFICATIONS. PLACE SLASH BELOW BASE OF FILL UNLESS OTHERWISE DIRECTED.
- COMPACT TREAD AND FILL ROOT HOLES WITH COMPACTED SOIL TO CREATE SMOOTH OUTSLOPE TREAD.
- ON STEEPER SLOPES SIDE CAST FILL, SPREAD AT DEPTH GREATER THAN 6 INCHES IF APPROVED BY THE ENGINEER.
- SPECIFICATIONS ARE INDENTED ONLY AS GUIDELINE, MODIFICATIONS MAY BE MADE IN THE FIELD BY THE ENGINEER.

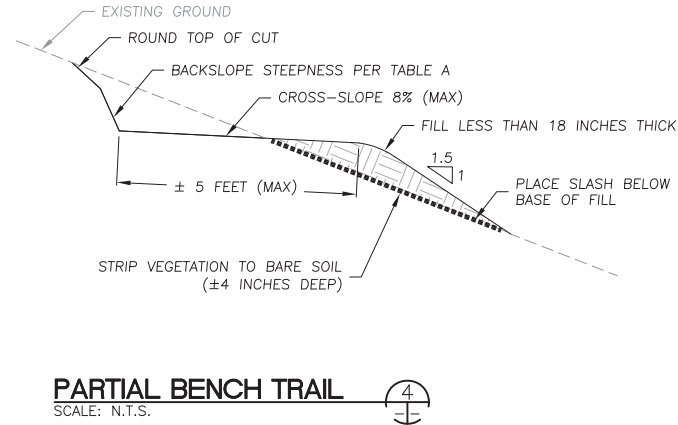
TABLE B

MATERIAL	ASTM CLASSIFICAITON	BACK SLOPE (H:V)
COMPETENT ROCK	—	½:1
DENSE SOIL — WEATHERED BEDROCK (SAND GRAVEL WITH FINES)	SM, SC, GM, GC	¾ TO 1:1
SOFT SOIL (SANDY CLAY AND COHESIONLESS SANDS)	CL, ML, SW, SP, GW, SP	1-1½ TO 1



NOTES:

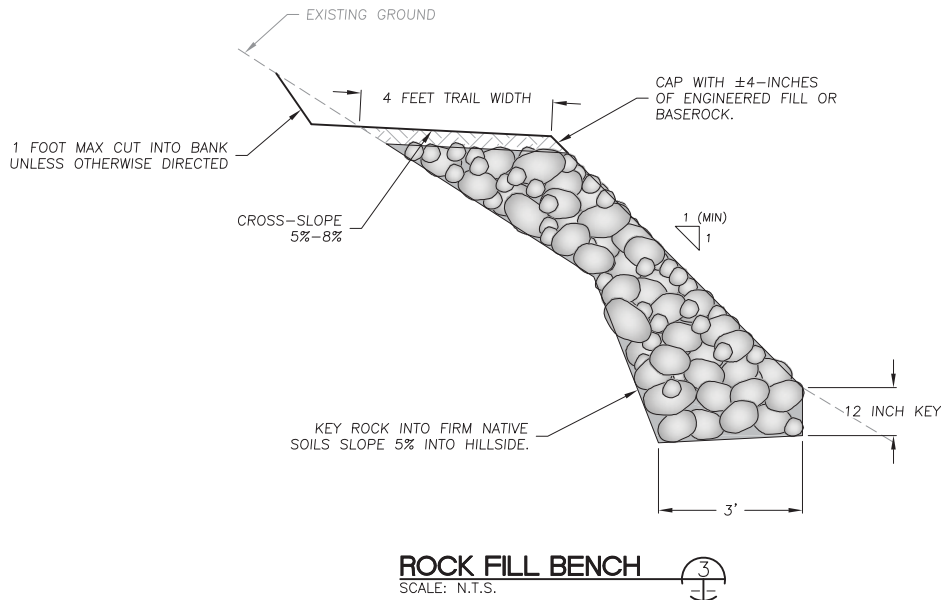
- TRAIL SHALL BE CONSTRUCTED AT 4 FOOT WIDTH UNLESS OTHERWISE SPECIFIED IN PLANS, OR AS DIRECTED.
- AREAS TO RECEIVE FILL SHALL BE STRIPPED TO REMOVE VEGETATION, NEAR-SURFACE ROOTS, BRUSH, HIGHLY ORGANIC SOILS AND OTHER UNSUITABLE FILL MATERIAL AS SPECIFIED.
- FILL SHALL BE KEYED AND BENCHED INTO FIRM NATIVE SOILS. KEYWAYS SHALL BE MINIMUM 2 FEET WIDE AND INCLINED 5% INTO SLOPE.
- ONSITE SOILS MAY BE REUSED AS FILL. FILL SHALL BE ADEQUATELY MOISTURE CONDITIONED AND COMPACTED TO A MINIMUM OF 85 PERCENT RELATIVE COMPACTION (PER ASTM D 1557); DURING PLACEMENT AND COMPACTION OF FILL, THE MOISTURE CONTENT OF THE MATERIALS BEING PLACED SHALL BE MAINTAINED AS NECESSARY.
- FILL EMBANKMENT SHALL BE INCLINED NO STEEPER THAN 1.5H:1V UNLESS OTHERWISE SPECIFIED OR DIRECTED.
- ALL DISTURBED AREAS OUTSIDE THE TRAIL TREAD SHALL BE TREATED TO CONTROL EROSION PER SPECIFICATIONS. PLACE SLASH OR STRAW ROLL BELOW BASE OF FILL UNLESS OTHERWISE DIRECTED.
- SPECIFICATIONS ARE INTENDED ONLY AS GUIDELINES; MODIFICATIONS MAY BE MADE IN THE FIELD BY THE ENGINEER.



NOTES:

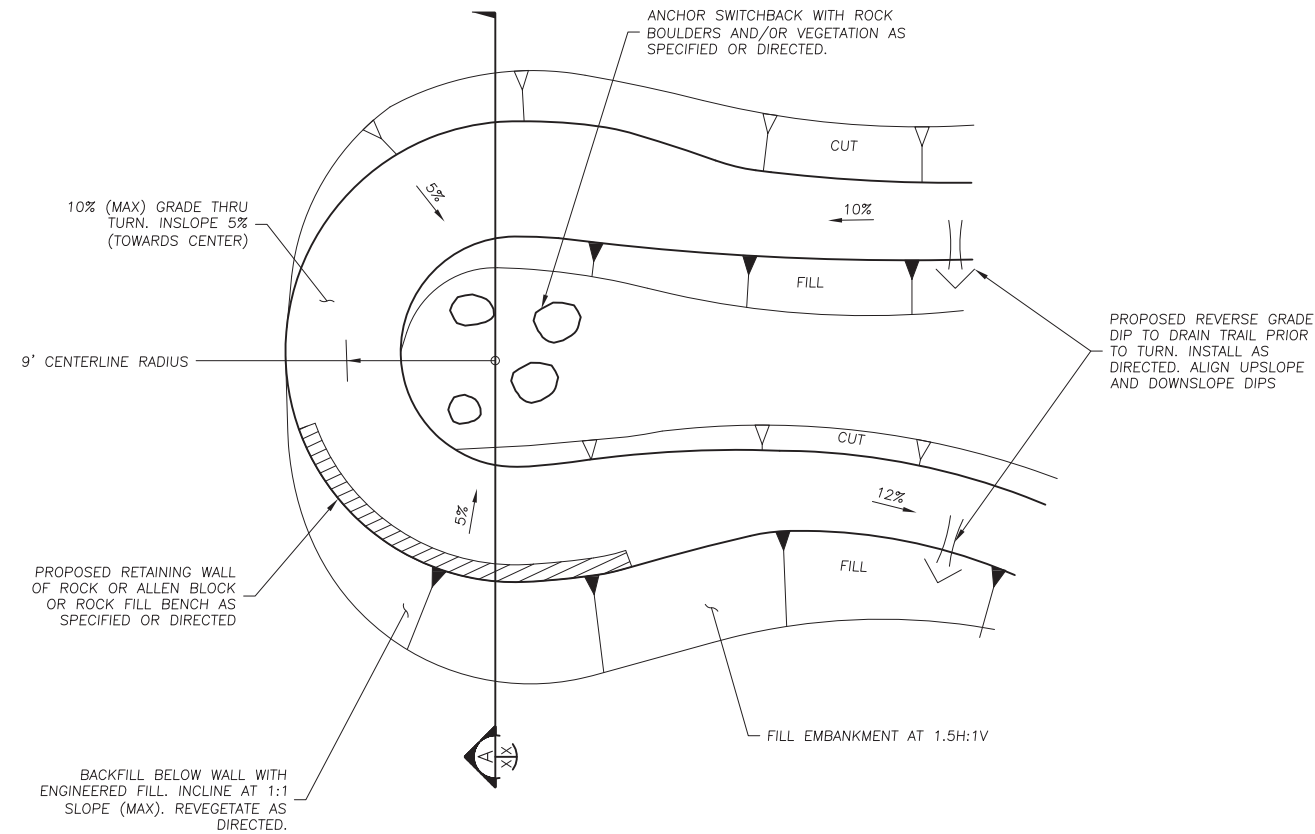
- TRAIL SHALL BE CONSTRUCTED AT 4-5 FEET. WIDTH ON BALANCED CUT AND FILL.
- AREAS TO RECEIVE FILL SHALL BE STRIPPED OF VEGETATION AND HIGHLY ORGANIC SOIL (~ 4" DEPTH).
- APPROVED ONSITE SOILS MAY BE REUSED AS FILL.
- FILL SHALL BE COMPACTED TO 85 PERCENT RELATIVE COMPACTION (PER ASTM D 1557). DURING PLACEMENT AND COMPACTION OF FILL, THE MOISTURE CONTENT OF THE MATERIALS BEING PLACED SHALL BE MAINTAINED AS NECESSARY.
- FILL SHALL BE A MAXIMUM OF 18 INCHES THICK UNLESS OTHERWISE SPECIFIED OR DIRECTED.
- FILL EMBANKMENT SHALL BE INCLINED NO STEEPER THAN 1.5H:1V (UNLESS OTHERWISE SPECIFIED).
- BACKSLOPE SHALL BE INCLINED PER TABLE A. WHERE CUTS ARE STEEPER THAN 6 FEET OR WHERE SEEPAGE OF WATER OR UNSUITABLE EARTH MATERIALS ARE ENCOUNTERED, THE BACKSLOPE SHALL BE SELECTED BY THE PROJECT ENGINEER. WHERE CUTSLOPE INCLINATIONS RESULT IN MORE EXTENSIVE GRADING THAN IS DESIRABLE AND IF INCREASED TRAIL MAINTENANCE IS ACCEPTABLE, NEW CUTSLOPES CAN BE CONSTRUCTED AT STEEPER INCLINATION AS APPROVED BY THE ENGINEER.
- ALL DISTURBED AREAS OUTSIDE THE TRAIL TREAD SHALL BE SLASH PACKED OR MULCHED TO PROTECT FROM EROSION PER STANDARD SPECIFICATIONS.
- COMPACT TREAD AND FILL ROOT HOLES WITH COMPACTED SOIL TO CREATE SMOOTH TREAD
- SPECIFICATIONS ARE INTENDED ONLY AS GUIDELINES. MODIFICATIONS MAY BE MADE IN THE FIELD BY THE ENGINEER.

TABLE A		
MATERIAL	ASTM CLASSIFICATION	BACK SLOPE (H:V)
COMPETENT ROCK	—	½:1
DENSE SOIL (SAND GRAVEL WITH FINES)	SM, SC, GM, GC	¾ TO 1:1
SOFT SOIL (SANDY CLAY AND COHESIONLESS SANDS)	CL, ML, SW, SP, GW, SP	1-1½ TO 1

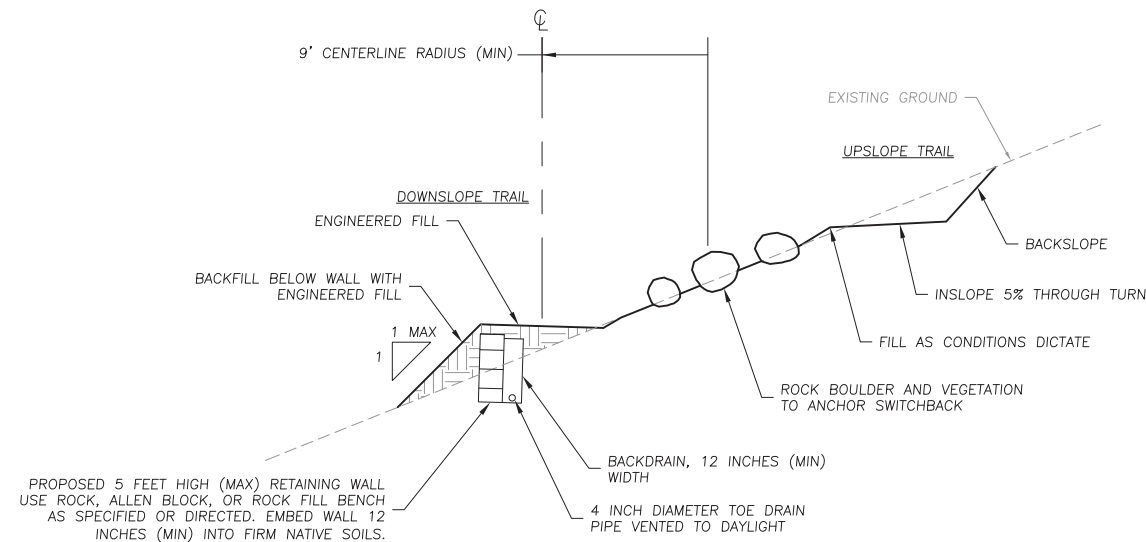


NOTES:

- TRAIL SHALL BE CONSTRUCTED AT 4 FOOT WIDTH UNLESS OTHERWISE SPECIFIED OR DIRECTED.
- AREAS TO RECEIVE ROCK FILL SHALL BE STRIPPED OF VEGETATION AND HIGHLY ORGANIC SOIL (~ 4 INCH DEPTH).
- FILL SHALL BE KEYED AND BENCHED INTO FIRM NATIVE SOILS. KEYWAYS SHALL BE MINIMUM 3 FEET WIDE AND INCLINED 5% INTO SLOPE.
- ROCK FILL SHALL CONSIST OF MIXED ROCK >4-INCHES IN DIAMETER. USE APPROVED ROCK OBTAINED ONSITE.
- ROCK SHALL BE BROUGHT UP TO FINAL TRAIL GRADE SLOPED APPROXIMATELY AT 1H:1V SLOPE.
- ROCK EMBANKMENT SHALL BE CAPPED BY 4 INCHES OF COMPACTED NATIVE FILL OR BASEROCK.
- SPECIFICATIONS ARE INTENDED ONLY AS GUIDELINES; MODIFICATIONS MAY BE MADE IN THE FIELD BY THE ENGINEER.



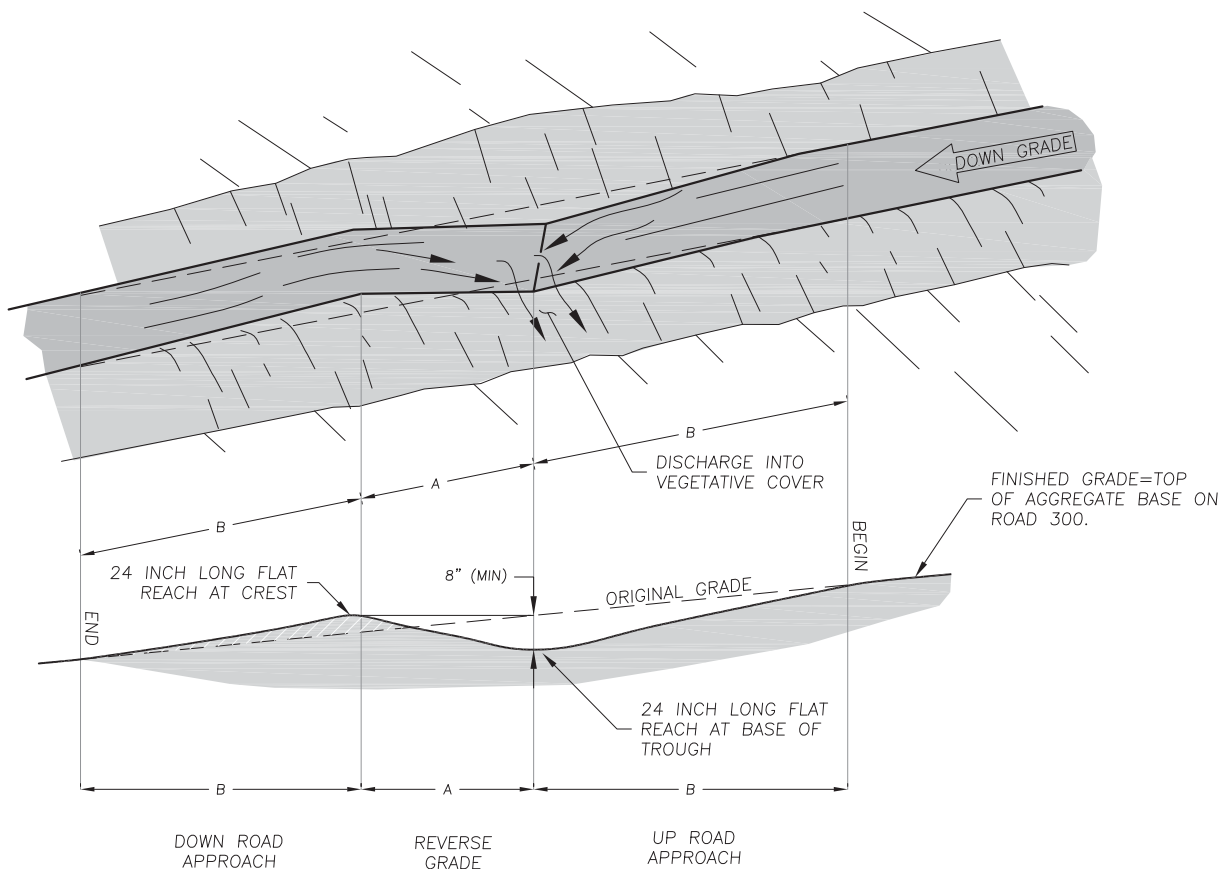
TRAIL SWITCHBACK - RETAINED
SCALE: N.T.S.



SECTION
SCALE: 1" = 1'

NOTES:

- 9 FOOT MINIMUM CENTERLINE RADIUS.
- TRAIL CENTERLINE ON LOCATION TO BE FLAGGED IN THE FIELD BY THE PROJECT ENGINEER AT THE TIME OF CONSTRUCTION.
- LIMITS OF GRADING TO BE FIELD FIT. CUTS AND FILLS MAY NOT BE BALANCED.
- SUPPORT OUTER EDGE RETAINING WALL, AS SHOWN (5 FT. MAX HEIGHT). CONSTRUCT RETAINING WALL USING APPROVED ALLAN BLOCK (ALLANBLOCK.COM) SEGMENTAL RETAINING WALL SYSTEM, STACKED ROCK, OR ROCK FILL BENCH. INSTALL MODULAR BLOCK WALLS PER MANUFACTURER'S GUIDELINES AND AS DIRECTED BY THE ENGINEER. PLACE TOP OF WALL 4-6 INCHES BELOW FINISHED GRADE.
- SET TOP OF WALL 6 INCHES BELOW FINISHED GRADE OF TRAIL.
- INSTALL BACK DRAIN ON WALLS > 3 FEET IN HEIGHT, UNLESS OTHERWISE SPECIFIED OR DIRECTED. DRAIN TO BE MINIMUM 12 INCHES WIDE. INSTALL 4 INCH DIA. SDR35 PERFORATED PVC TOE DRAIN VENTED TO DAYLIGHT AT BASE OF WALL. DRAIN TO CONSIST OF WELL-GRADED GRANULAR WALL ROCK 0.25 TO 1.5 INCHES, WITH LESS THAN 10% FINES, COMPACTED TO 90% MINIMUM RELATIVE COMPACTION.
- FOR WALL HEIGHTS BETWEEN 3 AND 5 FEET, INCORPORATE REINFORCEMENT GRID PER MANUFACTURER'S GUIDELINES (UNLESS OTHERWISE SPECIFIED).
- GROUND DOWNSLOPE OF WALL TO BE BACKFILLED WITH EARTH TO OBSCURE THE WALL AND FACILITATE REVEGETATION. FILL TO BE PLACED AT 1:1 MAXIMUM SLOPE, BROUGHT UP TO TOP OF RETAINING WALL AND COMPACTED TO 85% RELATIVE COMPACTION.
- ALL DISTURBED AREAS SHALL BE TREATED TO CONTROL EROSION PER SPECIFICATIONS.
- SPECIFICATIONS ARE INTENDED ONLY AS GUIDELINES; MODIFICATIONS MAY BE MADE IN THE FIELD BY THE ENGINEER.



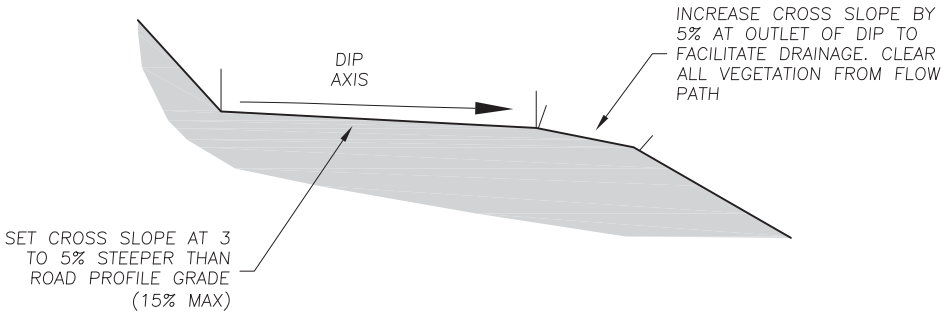
REVERSE GRADE DIP OVERVIEW
N.T.S.

ROAD GRADE (%)	TROUGH	A: REVERSE GRADE	B: UP ROAD APPROACH DOWN ROAD TRAIL	
	MINIMUM DEPTH BELOW DOWNSLOPE CREST	MINIMUM DISTANCE AND GRADE FROM TROUGH AXIS TO DOWNROAD CREST (FT)	DISTANCE FROM UP-ROAD START OF ROLLING DIP TO TROUGH AXIS (FT)	GRADE (%)
<5	8 INCHES	20 FT. AT 3%	20	8
5 TO 10			30	10
10 TO 15			50	19
15 TO 20			75	23

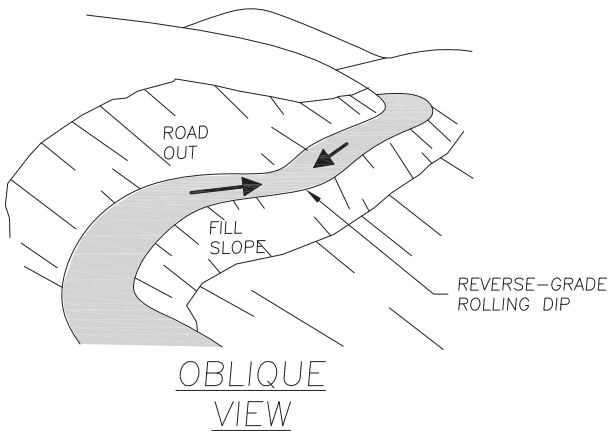
NOTES

- EXCAVATE THE UP ROAD HEAD BELOW THE EXISTING TREAD, WITH THE CREST AND DOWNROAD TAIL BUILT UP ON COMPACTED FILL.
- CONSTRUCT DIP TO A MINIMUM OF 6 INCHES DEEP ACROSS THE ENTIRE WIDTH OF THE ROAD PRISM AND INCORPORATE A 2 FOOT LONG FLAT REACH AT THE BASE OF THE TROUGH (UNLESS OTHERWISE DIRECTED).
- OUTSLOPE DIP AXIS 3%-5% STEEPER THAN ROAD/TRAIL GRADE. DIP AXIS MAY BE SKEWED DOWN ROAD AT 30 DEGREES TO FACILITATE INSTALLATION OF DIPS ON STEEPER ROAD GRADES.
- LOCATE DIP OUTLETS TO DRAIN INTO AREAS WITH ADEQUATE SEDIMENT FILTER QUALITY AND NON-ERODIBLE MATERIAL SUCH AS ROCK, SLASH, BRUSH, ETC. WHERE DIRECTED BY THE ENGINEER, DIP OUTLETS WILL BE ARMORED WITH 1/4 CY ROCK (4"-8" DIA).
- WHERE NATURAL SLOPES EXCEED 50%, FILL SHALL NOT BE PUSHED OVER THE DIP OUTLET. A BACKHOE OR EXCAVATOR MAY BE REQUIRED TO PULL BACK FILL AT OUTLET OF EXISTING DIPS.
- PLACE DIPS AT LOCATIONS SPECIFIED ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER

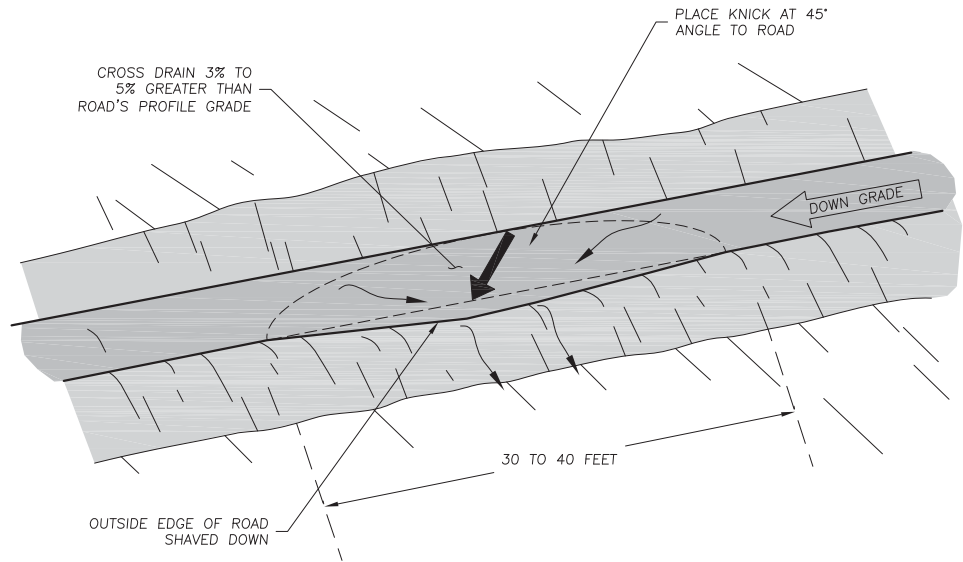
REVERSE GRADE DIP
SCALE: N.T.S.



ROAD SECTION



OBLIQUE VIEW

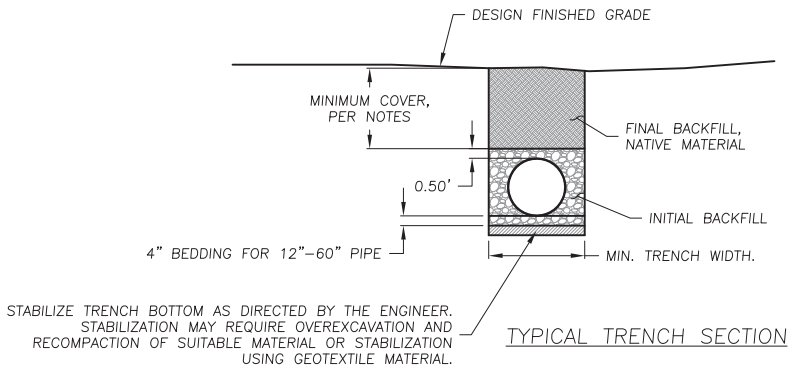
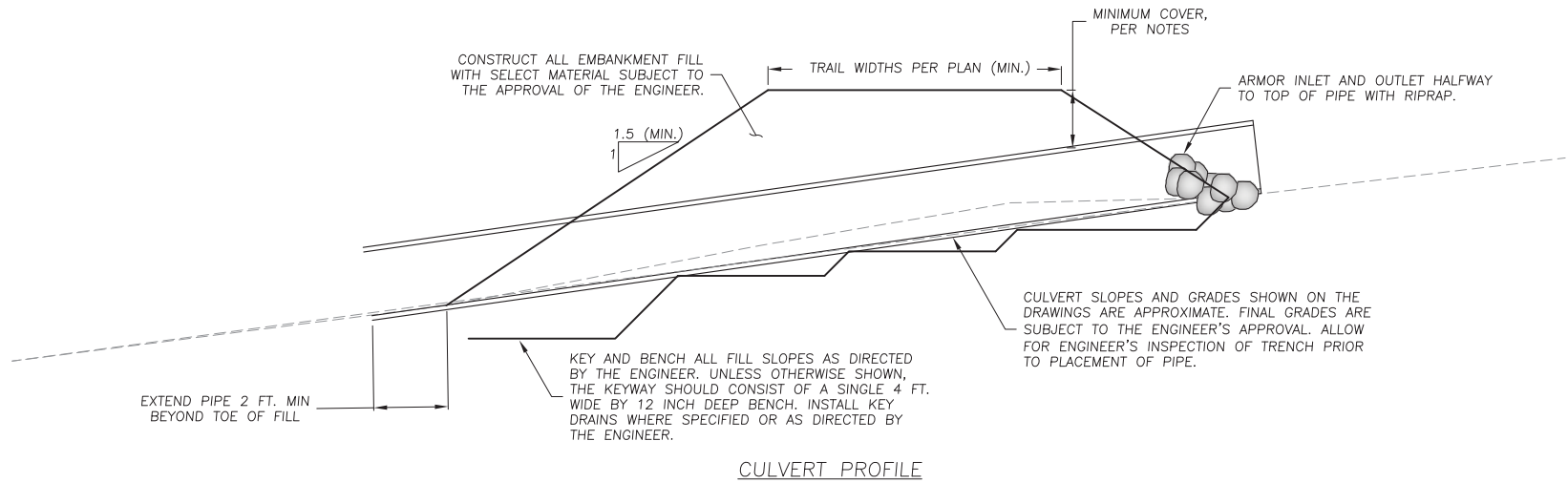


KNICK
SCALE: N.T.S.



NOTES

- A KNICK IS A SEMI-CIRCULAR, SHAVED-DOWN SECTION OF THE OUTSIDE EDGE OF THE ROAD.
- KNICK IS INSTALLED AT A 45-DEGREE ANGLE TO ROAD.
- THE CENTER OF THE NICK IS OUTSLOPED 3 TO 5% GREATER THAN ROAD'S PROFILE GRADE.
- DIP OUTLETS SHOULD BE LOCATED TO DRAIN INTO AREAS WITH ADEQUATE SEDIMENT FILTER QUALITY AND NON-ERODIBLE MATERIAL SUCH AS ROCK, SLASH, BRUSH, ETC.
- DO NOT PUSH ANY FILL TO THE OUTLET OF THE KNICK.



MINIMUM TRENCH WIDTHS	
PIPE DIA.	MIN. TRENCH WIDTH
10"	28"
12"	30"
15"	34"
18"	42"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
60"	96"

- NOTES:**
- UNLESS OTHERWISE SPECIFIED, ALL CULVERTS, DITCH RELIEF CULVERTS AND SLOPE DRAINS SHALL BE 18" DIAMETER AND SLOPE DRAINS SHALL BE "ADS N-12 WT" DUAL-WALLED HDPE PIPE WITH WATER-TIGHT BELL AND SOCKET FITTINGS WITH RUBBER GASKETS.
 - ALL PIPE INSTALLATION SHALL COMPLY WITH THE MANUFACTURER'S SPECIFICATIONS AND THESE DRAWINGS.
 - ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION.
 - MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED. THIS MAY REQUIRE WRAPPING BEDDING AND BACKFILL IN GEOTEXTILE MEMBRANE, WHERE SPECIFIED OR AS DIRECTED BY THE ENGINEER.
 - FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, EXCAVATE TO THE DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
 - BEDDING:** SUITABLE MATERIAL SHALL BE CLASS 1, 2, OR 3 (ASTM D2321). NATIVE SOILS MAY BE USED, SUBJECT TO APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" FOR 4"-24"; 6" FOR 30"-60".
 - INITIAL BACKFILL:** INITIAL BACKFILL SHALL BE CLASS 1 OR 2, IN ACCORDANCE WITH ASTM D2321. NATIVE SOILS MAY BE USED, SUBJECT TO APPROVAL OF THE ENGINEER.
 - FINAL BACKFILL:** SUITABLE MATERIAL SHALL BE LOCAL CLEAN MINERAL SOILS WITH NO ROCK LARGER THAN 3 INCHES.
 - MINIMUM COVER:** MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 18" UP TO 36" DIAMETER PIPE AND 24" OF COVER FOR PIPES OVER 36" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. FILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION OR TO SATISFACTION OF THE ENGINEER.
 - REFER TO GENERAL NOTES FOR MANDATORY INSPECTION AND APPROVAL POINTS.

CULVERT
SCALE: N.T.S.



PRELIMINARY DRAFT
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
CITY OF SARATOGA

DETAILS
(5 OF 5)

65% DESIGN SUBMITTAL
SARATOGA TO SANBORN
TRAIL PROJECT

DESIGNED BY:
DRAWN BY: C.B.H.
CHECKED BY: M.W.W.
DATE: 4/22/2019
JOB NO.: 18-056

BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS



C5.4

GENERAL NOTES

- 1) PREPARED AT THE REQUEST OF:
- a) MIDPENINSULA REGIONAL OPEN SPACE DISTRICT 0330 DISTEL CIRCLE LOS ALTOS, CA 94022
- 2) DEFINITIONS
- a) THE "CITY" SHALL BE CITY OF SARATOGA.
- b) THE "ENGINEERING GEOLOGIST" SHALL BE TIMOTHY C. BEST.
- c) THE "CIVIL ENGINEER" SHALL BE WATERWAYS CONSULTING
- d) THE "STRUCTURAL ENGINEER" SHALL BE MAYONE STRUCTURAL ENGINEERING, INC.
- e) THE "GEOTECHNICAL ENGINEER" SHALL BE HARO, KASUNICH AND ASSOCIATES, INC.
- f) THE "BRIDGE MANUFACTURER" SHALL BE THE SUPPLIER OF THE PREFABRICATED BRIDGE TRUSS ASSEMBLIES SELECTED BY THE MCOSD.
- g) THE "CONTRACTOR" SHALL BE AN INDEPENDENT CONTRACTOR SELECTED BY THE MCOSD TO PERFORM THE WORK DESCRIBED HEREIN.
- h) ON THESE PLANS "ENGINEER" REFERS TO "ENGINEERING GEOLOGIST", OR THEIR DESIGNATED REPRESENTATIVE. THE ENGINEER HAS BEEN RETAINED BY THE DISTRICT AND IS NOT AFFILIATED WITH THE CONTRACTOR.
- 3) CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ANY REQUIREMENTS OF THE DISTRICT'S GENERAL AND SUPPLEMENTAL CONDITIONS FOR THE PROJECT.
- 4) IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE FULLY INFORMED OF AND TO COMPLY WITH ALL LAWS, ORDINANCES, CODES, REQUIREMENTS AND STANDARDS WHICH IN ANY MANNER AFFECT THE COURSE OF CONSTRUCTION OF THIS PROJECT, THOSE ENGAGED OR EMPLOYED IN THE CONSTRUCTION AND THE MATERIALS USED IN THE CONSTRUCTION.
- 5) ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, APPLICABLE REQUIREMENTS OF 2016 EDITION OF THE CALIFORNIA BUILDING STANDARDS CODE, APPLICABLE CITY OF SARATOGA ORDANCES, CODES, AND REQUIREMENTS, AND APPLICABLE REQUIREMENTS OF CALIFORNIA DEPARTMENT OF FISH AND WILDLFE 1600 AGREEMENT. ANY DISCREPANCIES BETWEEN THE PERMITS AND PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION TO ENABLE THE ENGINEER TO ADDRESS THE NEED FOR PLAN MODIFICATIONS.
- 6) THE CONTRACTOR, AT CONTRACTOR'S SOLE EXPENSE, SHALL PROVIDE, ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED FOR COMPLETION OF ALL ITEMS SHOWN ON THE PLANS AND SPECIFICATIONS AND TO COMPLY WITH ALL APPLICABLE PERMIT CONDITIONS AND REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEVIATION FROM THESE PLANS AND ASSOCIATED RISK AND EXPENSE.
- 7) CULTURAL RESOURCES: IN THE EVENT THAT HUMAN REMAINS AND/OR CULTURAL MATERIALS ARE FOUND, ALL PROJECT-RELATED CONSTRUCTION SHALL CEASE WITHIN A 100-FOOT RADIUS. THE CONTRACTOR SHALL, PURSUANT TO SECTION 7050.5 OF THE HEALTH AND SAFETY CODE, AND SECTION 5097.94 OF THE PUBLIC RESOURCES CODE OF THE STATE OF CALIFORNIA, NOTIFY THE SANTA CLARA COUNTY CORONER IMMEDIATELY.
- 8) THE ENGINEERING GEOLOGIC REPORT PREPARED BY TIMOTHY C. BEST AND GEOTECHNICAL REPORT PREPARED BY HARO, KASUNICH AND ASSOCIATES SHALL BE CONSIDERED PART OF THE PLANS.

EXAMINATION OF JOB SITE, DRAWINGS AND SPECIFICATIONS.

- 1) THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE PROJECT DOCUMENTS WITH CONDITIONS AT THE SITE AND SHALL VERIFY EXISTING GRADES, ELEVATIONS AND CONDITIONS PRIOR TO COMMENCING WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER AND SHALL BE RESOLVED BEFORE PROCEEDING WITH THE WORK. ANY DEVIATION, SUBSTITUTION OR ALTERATION TO THE WORK SHALL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. WHEN IT IS FOUND THAT FIELD CONDITIONS ARE NOT AS SHOWN ON THE DRAWINGS, THE CONTRACTOR MUST MAKE REVISIONS AND/OR ADJUSTMENTS TO THE SATISFACTION OF THE ENGINEER/OWNER PRIOR TO FURTHER CONSTRUCTION.
- 2) THE CONTRACTOR SHALL EXAMINE CAREFULLY THE PROJECT AREA, THE DRAWINGS AND SPECIFICATIONS. THE SUBMISSION OF A BID SHALL BE CONCLUSIVE EVIDENCE THAT THE CONTRACTOR HAS INVESTIGATED AND IS SATISFIED AS TO THE CONDITIONS TO BE ENCOUNTERED, AS TO THE CHARACTER, QUALITY, AND SCOPE OF WORK TO BE PERFORMED, THE QUANTITIES OF MATERIALS TO BE FURNISHED AND AS TO THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.
- 3) IN THE EVENT THAT ANY UNUSUAL CONDITIONS NOT COVERED BY THE DRAWINGS AND SPECIFICATIONS ARE ENCOUNTERED DURING THE WORK, THE ENGINEER SHALL BE IMMEDIATELY CONTACTED FOR DIRECTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMMEDIATELY NOTIFY THE ENGINEER UPON DISCOVERY OF ANY CONFLICTS BETWEEN DRAWINGS AND FIELD CONDITIONS.
- 4) THE CONTRACTOR SHALL RECOGNIZE THAT THE CONDITIONS SHOWN ON THE DRAWINGS MAY DIFFER FROM THE ACTUAL PHYSICAL SITE. DIMENSIONS ARE APPROXIMATE. BEFORE PROCEEDING WITH THE WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EVALUATE THE SITE IN RELATION TO THE DRAWINGS AND SPECIFICATIONS AND REPORT ANY DISCREPANCIES TO THE DISTRICT AND THE ENGINEER.
- 5) THE CONTRACTOR MUST ATTEND A PRE-BID MEETING WITH THE ENGINEER PRIOR TO SUBMITTING A PROPOSAL TO COMPLETE THE PROPOSED WORK. A PURPOSE OF THIS MEETING IS SO THE CONTRACTOR MAY ASK QUESTIONS CONCERNING THE WORK AND TO MAKE SURE THE CONTRACTOR UNDERSTANDS THE PERMIT CONDITIONS AND ENVIRONMENTAL CONSTRAINTS.
- 6) THE CONTRACTOR MAY BE REQUIRED TO ATTEND A PRE-CONSTRUCTION MEETING WITH THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE PURPOSE OF THESE MEETINGS IS TO ALLOW THE CONTRACTOR TO ASK QUESTIONS CONCERNING THE WORK AND TO MAKE SURE THE CONTRACTOR UNDERSTANDS THE SCOPE OF WORK, PERMIT CONDITIONS AND ENVIRONMENTAL CONSTRAINTS.
- 7) AT ALL TIMES DURING PROJECT CONSTRUCTION ACTIVITIES, COPIES OF THE APPROVED FINAL DRAWINGS, SPECIFICATIONS, AND PERMITS SHALL BE MAINTAINED AT THE CONSTRUCTION JOB SITE (WHERE SUCH COPIES SHALL BE AVAILABLE FOR PUBLIC REVIEW) AND ALL PERSONS INVOLVED WITH THE CONSTRUCTION SHALL BE BRIEFED ON THE CONTENT AND MEANING OF EACH PRIOR TO COMMENCEMENT OF CONSTRUCTION.

MAPPING

- 1) TOPOGRAPHIC MAPPING PROVIDED BY:
- a) GROUND SURVEY BRIDGE: WATERWAYS CONSULTING, INC. SURVEY DATES VARY (2018)
- b) GROUND SURVEY TRAIL HEADS: TIMOTHY C. BEST, INC. SURVEY DATES VARY (2018)
- c) BASE MAP: DERIVED FROM 2014 SANTA CLARA COUNTY BARE EARTH LIDAR CONTOURS ON BASE MAP ARE APPROXIMATE
- 2) ELEVATION DATUM: GROUND BASED MAPS ARE BASED ON INDIVIDUAL ASSUMED LOCAL DATUM AERIAL LIDAR MAPPING: NAVD88 BASIS OF BEARINGS: NAD83 CALIFORNIA STATE PLANES, ZONE III
- 3) ELEVATIONS AND DISTANCES SHOWN ARE IN FEET AND DECIMALS THEREOF. CONTOUR INTERVAL VARIES.
- 4) THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES, IF SHOWN ARE APPROXIMATE AND SUBJECT TO CHANGE, PENDING THE RESULTS OF A COMPLETE BOUNDARY SURVEY.
- 5) THE CITY SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL PROPERTY LINES AND EASEMENTS AND CONFIRMING THAT PROPOSED PROJECT ELEMENTS ARE LOCATED ON CITY OWNED LANDS OR ARE COORDINATED WITH OWNERS AND APPROPRIATE PERMISSIONS ARE GRANTED FOR THE WORK.
- 6) CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED.
- 7) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL SURVEY MONUMENTS OR PROPERTY CORNERS. DISTURBED MONUMENTS SHALL BE RESTORED BACK TO THEIR ORIGINAL LOCATION AND SHALL BE CERTIFIED
- 8) MAINTAIN A CURRENT, COMPLETE, AND ACCURATE RECORD OF ALL AS-BUILT DEVIATIONS FROM THE CONSTRUCTION AS SHOWN ON THESE DRAWINGS AND SPECIFICATIONS, FOR THE PURPOSE OF PROVIDING THE ENGINEER OF RECORD WITH A BASIS FOR THE PREPARATION OF RECORD DRAWINGS.
- 9) TREE DIMENSIONS: ONLY TREES GREATER THAN OR EQUAL TO 8" DBF WITHIN OR IMMEDIATELY ADJACENT TO THE TRAIL FOOT PRINT ARE MAPPED. THE MAPPING OF SMALLER TREES IS INCOMPLETE. TRUNK DIAMETERS SHOWN ARE APPROXIMATE. TREE TRUNK DIMENSIONS MAY BE SHOWN OUT-OF-SCALE FOR PLOTTING CLARITY.

CAUTION SHOULD BE USED IN DESIGNING NEAR TREE TRUNKS. THERE ARE LIMITATIONS ON FIELD ACCURACY, DRAFTING ACCURACY, MEDIUM STRETCH AS WELL AS THE "SPREAD" OR "LEANING" OF TREES. REQUEST ADDITIONAL TOPOGRAPHIC DETAIL WHERE CLOSE TOLERANCES ARE ANTICIPATED.

EXISTING UNDERGROUND UTILITIES

- 1) CALL UNDERGROUND SERVICE ALERT (1-800-642-2444) TO LOCATE ALL UNDERGROUND UTILITY LINES PRIOR TO COMMENCING CONSTRUCTION.
- 2) PRIOR TO BEGINNING WORK, CONTACT ALL UTILITIES COMPANIES WITH REGARD TO WORKING OVER, UNDER, OR AROUND EXISTING FACILITIES AND TO OBTAIN INFORMATION REGARDING RESTRICTIONS THAT ARE REQUIRED TO PREVENT DAMAGE TO THE FACILITIES.
- 3) EXISTING UTILITY LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY THE APPROPRIATE UTILITY AGENCIES AND FROM FIELD MEASUREMENTS TO ABOVE GROUND FEATURES READILY VISIBLE AT THE TIME OF SURVEY. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND DEPTH OF UNDERGROUND UTILITIES.
- 4) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE LOCATION AND/OR PROTECTION OF ALL EXISTING AND PROPOSED PIPING, UTILITIES, TRAFFIC SIGNAL EQUIPMENT (BOTH ABOVE GROUND AND BELOW GROUND), STRUCTURES, AND ALL OTHER EXISTING IMPROVEMENTS THROUGHOUT CONSTRUCTION. IF THE CONTRACTOR FAILS TO ADEQUATELY PROTECT THE UTILITIES, ANY RESULTING DAMAGE SHALL BE REPAIRED AT CONTRACTOR'S COST.
- 5) PRIOR TO COMMENCING FABRICATION OR CONSTRUCTION, DISCOVER OR VERIFY THE ACTUAL DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS ARE LIKELY OR DATA IS OTHERWISE INCOMPLETE.
- 6) TAKE APPROPRIATE MEASURES TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION OPERATIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE COST OF REPAIR/REPLACEMENT OF ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
- 7) UPON LEARNING OF THE EXISTENCE AND/OR LOCATIONS OF ANY UNDERGROUND FACILITIES NOT SHOWN OR SHOWN INACCURATELY ON THE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER, IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE CITY BY TELEPHONE AND IN WRITING.
- 8) UTILITY RELOCATIONS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT FACILITIES WILL BE PERFORMED BY THE UTILITY COMPANY, UNLESS OTHERWISE NOTED.

TRAIL LAYOUT

- 1) NEW TRAIL, BRIDGES AND CULVERTS SHALL BE CONSTRUCTED AS SHOWN ON THESE PLANS. MODIFICATIONS TO THE ALIGNMENT MAY BE MADE BASED ON ONSITE CONDITIONS. CONTACT TIMOTHY BEST, CEG (831-425-5832) FOR TRAIL, BRIDGE AND CULVERT LOCATIONS.
- 2) FINAL FLAGGED TRAIL ALIGNMENT SHALL BE REVIEWED BY THE ENGINEERING PRIOR TO ANY EARTHWORK.
- 3) NEW TRAIL SHALL BE LAID OUT TO CONFORM TO NATURAL TERRAIN TO CREATE AN AESTHETICALLY PLEASING ALIGNMENT. THE ALIGNMENT SHOULD AVOID LONG STRAIGHT REACHES. THE ALIGNMENT SHOULD INCORPORATE NATURAL TERRAIN FEATURES TO FORM REQUIRED REVERSE GRADES DIPS TO THE EXTENT FEASIBLE.
- 4) TRAIL SHALL BE LAID OUT AND CONSTRUCTED TO INCORPORATE BROAD REVERSE GRADE DIPS. TO THESE EXTEND FEASIBLE THESE SHOULD BE INCORPORATE INTO THE TRAIL DESIGN RATHER THAN CONSTRUCTED AFTER THE FACT. SEE TRAIL DRAINAGE AND TYPICAL SPECIFICATIONS FOR MAXIMUM DIP SPACING
- 5) ANY MODIFICATIONS TO THE ALIGNMENT SHALL BE REVIEWED AND APPROVED BY THE PROJECT ENGINEERING GEOLOGIST AND DISTRICT REPRESENTATIVE PRIOR TO THE COMMENCEMENT OF THAT WORK.

DRAINAGE AND EROSION CONTROL

- 1) DURING PROJECT CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING APPROPRIATE AND NECESSARY DRAINAGE AND EROSION CONTROL MEASURES TO MINIMIZE STORM WATER RUNOFF FROM THE CONSTRUCTION SITE, PURSUANT TO APPLICABLE REGULATIONS AND PERMITS.
- 2) THE FOLLOWING STRATEGIES TO ENSURE THAT STORM WATER POLLUTION IS PREVENTED SHALL BE EMPLOYED:
- a) LIMIT THE EXTENT OF TRAIL UNDER CONSTRUCTION AT ANY GIVEN TIME
- b) INSTALL TEMPORARY SILT FENCES AS PRESCRIBED ON PLANS
- c) INSTALL PERMANENT EROSION CONTROL MEASURES AS TRAIL CONSTRUCTION PROGRESSES. PERMANENT EROSION CONTROL MEASURES INCLUDE:
- d) INSTALL FREQUENT REVERSE GRADE DIPS AT ROUGHLY 100 TO 150 FOOT SPACINGS.
- e) EXPOSED MINERAL SOILS OUTSIDE OF THE TRAIL RUNNING SURFACE GREATER THAN 50 SQUARE FEET (SF) AND WITH EXPOSED SLOPE DISTANCE EXCEEDING 10 FEET AND WITH LESS THAN 80% GROUND COVERAGE OF NATURAL VEGETATION SHALL BE MULCHED IN ORDER TO REDUCE THE POTENTIAL FOR SHORT-TERM SHEET AND RILL EROSION. MULCH USING NATIVE DUFF AND SLASH.
- 3) WINTER CONSTRUCTION
- a) ANY GRADING FOR THE PROJECT AFTER OCTOBER 1 SHALL BE COMPLETED IN DRY WEATHER OR LOW RAINFALL (LESS THAN ¼ INCH PER 24 HOUR PERIOD).
- b) A MINIMUM OF 200 LINEAR FEET OF STRAW WATTLE AND EROSION CONTROL BLANKETS SHALL BE AVAILABLE AT STAGING AREA OR ON SITE AT ALL TIMES.
- c) IN THE EVENT OF 25 PERCENT CHANCE OF FORECAST INCLEMENT WEATHER (GREATER THAN ½ INCH OF RAINFALL IN 24 HOUR PERIOD), TEMPORARY EROSION CONTROL MEASURES (E.G. STRAW WATTLES, SILT FENCE, EROSION CONTROL BLANKETS, ETC) SHALL BE INSTALLED TO PROTECT THE SECTION OF TRAIL THAT IS CURRENTLY UNDER CONSTRUCTION.

INSPECTIONS

- 1) ANY TESTS, INSPECTIONS, SPECIAL OR OTHERWISE, THAT ARE REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR THESE PLANS, SHALL BE DONE BY AN INDEPENDENT INSPECTION COMPANY. JOB SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE AN OFFICIAL INSPECTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE REQUIRED TESTS AND INSPECTIONS ARE PERFORMED.
- 2) ALL WORK SHALL BE SUBJECT TO OBSERVATION, TESTING AND APPROVAL BY DISTRICT, ENGINEER, GEOTECHNICAL ENGINEER, AND STRUCTURAL ENGINEER, IN ADDITION TO INSPECTIONS REQUIRED BY REGULATORY AGENCIES.
- 3) THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER A MINIMUM OF 7 DAYS PRIOR TO COMMENCEMENT OF WORK AND A MINIMUM OF 4 DAYS IN ADVANCE OF REQUIRED INSPECTIONS. THE GEOTECHNICAL ENGINEER SHALL ALSO BE NOTIFIED AT LEAST FOUR (4) WORKING DAYS PRIOR TO ANY SITE CLEARING OR GRADING SO THAT THE WORK IN THE FIELD CAN BE COORDINATED WITH THE GRADING CONTRACTOR, AND ARRANGEMENTS FOR TESTING AND OBSERVATION CAN BE MADE. THE PROJECT ENGINEER (ENGINEER) SHALL BE PROVIDED AN OPPORTUNITY TO REVIEW PROJECT DRAWINGS WITH THE CONTRACTOR DURING THE PRE-CONSTRUCTION MEETING TO EVALUATE IF RECOMMENDATIONS HAVE BEEN PROPERLY INTERPRETED. THE ENGINEER SHALL ALSO PROVIDE KEYWAY EXCAVATION AND EARTHWORK OBSERVATIONS. THIS ALLOWS THE ENGINEER TO CONFIRM ANTICIPATED SOIL CONDITIONS AND EVALUATE CONFORMANCE WITH OUR RECOMMENDATIONS AND PROJECT DRAWINGS. IF THE ENGINEER IS NOT PROVIDED THIS OPPORTUNITY THEY ASSUME NO RESPONSIBILITY FOR MISINTERPRETATION OF THE RECOMMENDATIONS.
- 4) REGULATORY AGENCIES MAY REQUIRE A FINAL GRADING COMPLIANCE LETTER. WE CAN ONLY OFFER THIS LETTER IF WE ARE CALLED TO THE SITE TO OBSERVE AND TEST, AS NECESSARY, ANY GRADING AND EXCAVATION OPERATIONS FROM THE START OF CONSTRUCTION. WE CANNOT PREPARE A LETTER IF WE ARE NOT AFFORDED THE OPPORTUNITY OF OBSERVATION FROM THE BEGINNING OF THE GRADING OPERATION. THE CONTRACTOR MUST BE MADE AWARE OF THIS AND EARTHWORK TESTING AND OBSERVATION MUST BE SCHEDULED ACCORDINGLY. PLEASE CONTACT OUR OFFICE.
- 5) IF UNFORESEEN CONDITIONS ARE ENCOUNTERED DURING CONSTRUCTION, OR IF THE PROPOSED CONSTRUCTION WILL DIFFER FROM THAT PLANNED AT THIS TIME, THE ENGINEER SHALL BE NOTIFIED SO THAT SUPPLEMENTAL RECOMMENDATIONS CAN BE GIVEN.

CONSTRUCTION OBSERVATION SCHEDULE

- 1) IN ADDITION TO OBSERVATIONS OF WORK, ENGINEER WILL FLAG THE LOCATION OF PROPOSED FEATURES.
- 2) REQUIRED OBSERVATIONS BY ENGINEER SHALL INCLUDE, BUT NOT BE LIMITED TO:
- a) FINAL TRAIL ALIGNMENT, TRAIL ROUGH AND FINAL GRADING, DRAINAGE FEATURE LOCATIONS (INCLUDING DRAIN DIPS, KNICKS, ETC)
- b) LIMITS OF GRADING, EXCAVATION AND SPOIL PLACEMENT
- c) RETAINING WALL LOCATIONS AND EXCAVATIONS
- d) LIMITS OF PROPOSED BORROW SITES
- e) BRIDGE LOCATION, FOUNDATION EXCAVATION (FOOTING INSPECTION), STEEL REINFORCEMENT PLACEMEN, CONCRETE PLACEMENT, BRIDGE INSTALLATION
- f) BMP'S, INCLUDING DIVERSION AND DEWATERING SYSTEMS, PRIOR TO SITE DISTURBING ACTIVITIES

SCHEDULE

- 1) PROJECT SCHEDULE: PRIOR TO COMMENCEMENT OF WORK, SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL A DETAILED CONSTRUCTION SCHEDULE. DO NOT BEGIN ANY CONSTRUCTION WORK UNTIL THE PROJECT SCHEDULE AND WORK PLAN IS APPROVED BY THE ENGINEER. ALL CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER SO THAT THE QUALITY OF WORK CAN BE CHECKED FOR APPROVAL. PURSUE WORK IN A CONTINUOUS AND DILIGENT MANNER TO ENSURE A TIMELY COMPLETION OF THE PROJECT.
- 2) THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, PERMITTING, INSTALLATION, AND MAINTENANCE OF ANY AND ALL TRAFFIC CONTROL MEASURES DEEMED NECESSARY.

SAFETY

- 1) THE CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL SAFETY DURING CONSTRUCTION. ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS AND CODES. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.
- 2) CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL. NEITHER THE PROFESSIONAL ACTIVITIES OF CONSULTANT NOR THE PRESENCE OF CONSULTANT OR HIS OR HER EMPLOYEES OR SUB-CONSULTANTS AT A CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR AND ITS SUBCONTRACTORS OF THEIR RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE HEALTH OR SAFETY REQUIREMENTS OF ANY REGULATORY AGENCY OR OF STATE LAW.
- 3) CONTRACTOR IS REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
- 4) THE CONTRACTOR SHALL CONFORM TO THE RULES AND REGULATIONS OF THE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF OCCUPATIONAL SAFETY AND HEALTH PERTAINING TO EXCAVATION AND TRENCHES THE CALIFORNIA CODE OF REGULATIONS TITLE 8, SUBCHAPTER 4 CONSTRUCTION SAFETY ORDERS, ARTICLE 6 EXCAVATION.

STAGING AND ACCESS

- 1) AUTHORIZED CONSTRUCTION ACCESS POINTS, ROUTES, AND STAGING AREAS ARE SHOWN ON THE DRAWINGS. CONSTRUCTION ACCESS AND STAGING AREAS WILL BE RESTRICTED TO EXISTING ROADS AND PREVIOUSLY CLEARED TURNOUTS OR LANDINGS, UNLESS OTHERWISE AUTHORIZED BY THE CITY'S REPRESENTATIVE.
- 2) IMPACTS TO THE ACCESS ROUTES MUST BE MINIMIZED AND DISTURBANCE ALONG THE ACCESS ROUTE SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS UPON PROJECT COMPLETION.
- 3) THE CONTRACTOR SHALL CAREFULLY PRESERVE THE SURROUNDING PROPERTY BY CONFINING OPERATIONS WITHIN THE LIMITS OF WORK. CONSTRUCTION WORK OR EQUIPMENT OPERATIONS SHALL NOT BE CONDUCTED OUTSIDE THE DESIGNATED WORK AREA BOUNDARY WITHOUT APPROVAL OF THE DISTRICT.
- 4) ACCESS OVER EXISTING ROADS SHALL BE MAINTAINED. IF THROUGH ACCESS CANNOT BE MAINTAINED, A SCHEDULE FOR CLOSURE MUST BE APPROVED BY A CITY'S REPRESENTATIVE.
- 5) NO AREA WITHIN THE CONTRACT LIMITS IS AVAILABLE FOR THE EXCLUSIVE USE OF CONTRACTOR. USE OF CONTRACTOR'S WORK AREAS AND ANY MOBILIZATION AREAS SHALL BE AT CONTRACTOR'S OWN RISK, AND CITY SHALL NOT BE HELD LIABLE FOR ANY DAMAGE OR LOSS OF MATERIALS OR EQUIPMENT LOCATED WITHIN SUCH AREAS.

HOUSEKEEPING

- 1) MAINTAIN THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. STORE ALL MATERIALS WITHIN APPROVED STAGING AREAS.
- 2) CONSTRUCTION WATER IS AVAILABLE AT **xxxxx**
- 3) THE CONTRACTOR SHALL MAINTAIN GOOD CONSTRUCTION SITE HOUSEKEEPING CONTROLS AND PROCEDURES (E.G., CLEAN UP ALL LEAKS, DRIPS, AND OTHER SPILLS IMMEDIATELY; KEEP MATERIALS COVERED AND OUT OF THE RAIN (INCLUDING COVERING EXPOSED PILES OF SOIL AND WASTES); DISPOSE OF ALL WASTES PROPERLY, PLACE TRASH RECEPTACLES ON SITE FOR THAT PURPOSE, COVER OPEN TRASH RECEPTACLES DURING WET WEATHER, REMOVE ALL CONSTRUCTION DEBRIS FROM THE SITE. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL VEHICLES AND EQUIPMENT AND TO INSPECT THEM FREQUENTLY FOR LEAKS.
- 4) EQUIPMENT WASHING, REFUELING, AND/OR SERVICING SHALL NOT TAKE PLACE EXCEPT WITH APPROPRIATE PRECAUTIONS TO AVOID FUEL SPILLS. AT LEAST 100 FEET AWAY FROM STREAM CHANNELS, FOR VEHICLE AND EQUIPMENT MAINTENANCE.
- 5) PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS SHALL BE STORED OFFSITE.
- 6) SWEEP UP ANY SPILLED DRY MATERIALS IMMEDIATELY. USE ONLY WATER FOR DUST CONTROL. 7. CLEAN UP ANY SPILLS ON A DIRT AREA BY DIGGING UP AND PROPERLY DISPOSING OF CONTAMINATED SOIL AT AN APPROPRIATE FACILITY.



TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY
1002 Columbia Street, Santa Cruz, CA 95060
(831) 425 5832 (831) 425 5830 (fax)

PRELIMINARY DRAFT
NOT FOR CONSTRUCTION

PREPARED AT THE REQUEST OF:
CITY OF SARATOGA
PUBLIC WORKS
13777 FRUITVALE AVE
SARATOGA, CA 95070

GENERAL
NOTES

65% DESIGN SUBMITAL
SARATOGA TO SANBORN
TRAIL PROJECT

DESIGNED BY: T.C.B.
DRAWN BY: T.C.B.
CHECKED BY: T.C.B.
DATE: 5/2/2019
JOB NO.: SAR-SAR2SAN-767

BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS



C5.5