Appendix D
Mission Creek Biological Technical Report

Mission Canyon Stream Habitat Restoration Project

Initial Study/Mitigated Negative Declaration

Final Mission Creek Habitat Restoration Project Biological Technical Report

DECEMBER 2023

PREPARED FOR

Southern California Edison
Environmental Services Department

PREPARED BY

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MISSION CREEK HABITAT RESTORATION PROJECT
BIOLOGICAL TECHNICAL REPORT

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EXECUTIVE SUMMARY

Southern California Edison (SCE) proposes to implement sediment removal and stream habitat restoration activities within the Mission Canyon area of Santa Barbara County, California. This biological technical report prepared by SWCA Environmental Consultants (SWCA) details the results of the site assessments, vegetation community mapping, protocol rare plant and wildlife surveys, focused special-status species surveys, and habitat assessments for areas that will be restored within the project footprint. The sediment removal and restoration activities are proposed to restore grading-related rock and sediment discharge into and adjacent to Mission Creek and related tributaries in Santa Barbara County, California, resulting from activities performed as part of maintenance operations that focused on road grading and widening to reduce the risk of rock fall and to maintain SCE infrastructure access in December 2019.

The stream restoration will remove sidecast material from within the creek bed to restore natural hydrologic features and stabilize the creek banks and slopes. Restoration activities as described in the Mission Creek Habitat Restoration and Mitigation Plan (HELIX Environmental Planning, Inc. 2023)—as well as access and staging—will occur in and adjacent to Mission Creek and will result in direct and indirect temporary impacts to sensitive resources, including California Department of Fish and Wildlife (CDFW) sensitive natural communities and habitat for special-status plants and wildlife species.
To reduce temporary direct and indirect impacts during restoration to less than significant, avoidance and minimization efforts will be implemented in accordance with the avoidance, minimization, and mitigation measures included in this biological technical report.

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1 PROJECT DESCRIPTION

In December 2019, Southern California Edison (SCE) performed maintenance operations that consisted of road grading and widening along Spyglass Ridge Road within the Mission Canyon area of Santa Barbara County, California (the "December 2019 work") (Appendix A: Figure A-1). The purpose of the maintenance was to widen the road and reduce the risk of rock falls to maintain access to existing infrastructure, such as transmission towers and associated transmission lines in the foothills along the access road. During grading activities, rock and spoils were discharged beyond the road prism and downslope into jurisdictional areas within Mission Creek and two unnamed tributaries (Road Areas 1 and 2) to Mission Creek. The disposal caused impacts to the streambed, trees, sensitive plants, and native habitats (Appendix A: Figure A-2). While smaller rocks and fine sediment material have settled on the slopes above the creek, larger rocks and additional fine material have settled in the creek and tributary bottoms.

1.1 Project Overview

The objective of the sediment removal and stream restoration project (project) is to remove sidecast material[1] and restore impacted habitat within the project site which encompasses 7.24 acres along Mission Creek in Santa Barbara County. The goal of the project is to restore Mission Creek stream habitat such that it may support native fish use to levels that existed before the December 2019 work. The project objective will be met by implementation of the Mission Creek Habitat Restoration and Mitigation Plan (Creek HRMP) (HELIX Environmental Planning, Inc. [HELIX] 2023).

This section describes the project and identifies goals, strategies, and activities proposed by SCE to restore the resources impacted by the December 2019 work. The project is specifically designed for the full removal of sidecast rock and sediments deposited in regulatory and upland areas, to restore stream hydrology (e.g., pools and riffles) and habitat within the project site to support native fish use to levels that existed prior to the December 2019 work, and to stabilize creek banks and slopes. The 'project site' includes the areas subject to restoration activities, staging areas, existing roads, existing berms, and contingency buffers.

The project will also restore impacted native vegetation habitats and promote the regrowth of upland chaparral and woodland/forest habitats, rehabilitate sensitive species populations within the project site, and remediate impacted trees within Mission Creek. Pre-project activities include a stream hydrology survey, seed collection, weed abatement, avoidance flagging of sensitive resources, and mobilization of equipment into approved staging and stockpiling locations. Restoration activities will begin with sidecast removal.

Restoration installation will be carried out under the direction of the restoration ecologist and supported by a stream fluvial morphology team (consisting of a stream restoration ecologist, a fluvial morphologist, and a stream hydrologist), as well as botanists, arborists, and wildlife biologists (HELIX 2023). Following site preparation, the installation will be completed in the following phases:

1. Removal of sidecast from regulatory and upland areas
2. Tree remediation through the removal of sidecast material
3. Restoration of stream hydrology and function
4. Slope stabilization

[1] For purposes of this assessment, "sidecast materials" excludes materials repurposed as building materials (e.g., for berms).

5. Hydroseeding
6. Planting
7. Cutting collection
8. Cutting installation
9. Post-planting watering
10. Species-specific rehabilitation

Habitat restoration is intended to consist of three main phases: restoration planning and preparation, installation, and the maintenance and monitoring program.

1.1.1 *Project Goals*

This section provides an overview of SCE's strategy to restore resources impacted in Mission Creek and associated tributaries and meet the following goals, as stated in the Creek HRMP:

- Full removal of all sidecast material[2]
- Restore stream hydrology (e.g., pools and riffles) and habitat
- Remediate impacted trees within Mission Creek
- Stabilize creek banks and slopes
- Restore impacted woodland/forest and chaparral habitats
- Rehabilitation of sensitive plant species within the project site

To accomplish these objectives, the HRMP identifies the sidecast removal methods, restoration strategies, installation methods, maintenance requirements, monitoring criteria, and performance metrics to remediate the effects of the grading violation, including impacts to streambed and adjacent upland native habitats (Helix 2023).

1.1.2 *Technical Implementation Plan*

Before sidecast removal, the fluvial morphology team will develop a technical implementation plan (TIP) (HELIX 2023). The purpose of the TIP is to provide an execution document to guide the process of sidecast removal and the restoration and repair of habitat features within impacted areas (HELIX 2023). The TIP will also present protocols to achieve the goals of the Creek HRMP while protecting and restoring the pre-impact natural stream topography, habitat, and function (HELIX 2023). As sidecast removal begins, the construction operators will perform sidecast material removal under the direction and supervision of the fluvial morphology team to ensure that only sidecast material is removed (HELIX 2023).

1.1.3 *Sidecast Removal*

Table 1 summarizes the total refined volume estimates from data collected in November 2020, September 2021, and September 2022, collectively. In accordance with the Creek HRMP, the data represent the best approximation, after multiple field visits, individual site inspections, and detailed data

[2] Full removal of sidecast material within the Project site at the time of Project construction, with noted constraints identified in the HRMP.

collection, of the volumes of sidecast material deposited by SCE's December 2019 work. The total estimated volume of sidecast material (rock, sediment, and debris) deposited within the regional water quality control board (RWQCB) and California Department of Fish and Wildlife (CDFW) regulatory areas was approximately 1,413 cubic yards, inclusive of the total estimated 135.4 cubic yards of sidecast material within U.S. Army Corps of Engineers (USACE) regulatory areas (HELIX 2023). The total estimated volume of sidecast material (rock, sediment, and debris) deposited within upland areas was approximately 1,518.8 cubic yards. Outside of the originally impacts from the December 2019 work, approximately 600 cubic yards were subsequently used to construct roadside berms from the Gate Area through Road Area 9 (HELIX 2023). Table one summarizes the total sidecast, boulders and sediment deposited in areas regulated by the USACE, RWQCB and/or CDFW.

Table 1. Sidecast Rock, Boulders, and Sediments within Mission Canyon

Site	Surface Area (square feet)	Total Sidecast Volume (cubic yards)	Volume within USACE Jurisdiction cubic yards)	Volume within RWQCB/CDFW Jurisdiction (cubic yards)
Sidecast	108,230.65	2,331.80	135.40	1,413.00
Berms	0.00	600	0.00	0.00
Total	**108,230.65**	**2,931.80**	**135.40**	**1,413.00**

1.1.3.1 CONTINGENCY BUFFERS

Contingency buffers are areas that will accommodate restoration activity impacts that may extend outside of the limits of the main sidecast areas. Work within the contingency buffers will include the restoration activities defined in the Creek HRMP and summarized herein. Contingency buffers have been included around the following project sites (Appendix A: Figure A-2):

- Road Area 1
- Sidecast 3 Rock Outliers
- Road Area 2
- Mission Creek Sites 1 through 4

Contingency buffers were included in the biological resources survey areas. Expected impacts to natural resources within these areas were assessed and will be fully avoided, minimized, or mitigated by implementation of the project applicant proposed measures (APMs) and mitigation measures (MMs). Table 2 shows contingency buffer areas within RWQCB/CDFW and USACE Jurisdictions.

Table 2. Project Areas within RWQCB/CDFW and USACE Jurisdictions

Project Site	RWQCB/CDFW (Acres)	USACE (Acres)
Road Area 1—Project Area	0.39	0.00
Road Area 1—Contingency	0.14	0.01
Sidecast 3 Rock Outliers—Contingency	0.08	0.00
Road Area 2—Project Area	0.09	0.00
Road Area 2—Contingency	0.06	0.00

Project Site	RWQCB/CDFW (Acres)	USACE (Acres)
Mission Creek—Project Area (Creek Sites 1–4)	0.44	0.04
Mission Creek—Contingency (Creek Sites 1–4)	0.06	0.03
Mission Creek Site 7	0.00	0.00
Road Areas 5–9—Project Area	0.01	0.00
Total Project Area	*1.01*	*0.05*
Total Contingency	*0.27*	*0.09*
Total	**1.28**	**0.09**

1.1.3.2 SIDECAST REMOVAL METHODS

Per the Creek HRMP, SCE's sidecast removal methodologies were finalized through a comparative scoping analysis performed by SCE's project team in August 2022 (HELIX 2023). Through this iterative process, four methods to extract sidecast materials deposited during the December 2019 work were selected to achieve maximum extraction of sidecast material without causing harm to sensitive environmental resources while maintaining a safe working environment and protecting public safety long term (HELIX 2023).

According to the Creek HRMP, the primary method identified for sidecast removal is the combination of manual or hand removal and removal using vacuum or guzzler trucks (hand and guzzler removal technique) (HELIX 2023). The hand and guzzler removal technique will be used in conjunction with machinery staged on the road to facilitate the removal of the larger rock (HELIX 2023). Two additional sidecast removal methods were also described in the Creek HRMP, including hand removal and helicopter removal.

Hand and Guzzler Removal

Per the Creek HRMP, hand and guzzler removal is performed by manual removal by technicians in combination with vacuum or guzzler trucks and a small excavator and transported to an approved staging location. The construction contractor will use guzzler trucks (large vacuum trucks) staged from the existing access road/trail adjacent to work areas to remove fine materials and rock approximately 3 inches in diameter or smaller (HELIX 2023). Manual manipulation of the hose will remove materials within the reach extent of the hose (HELIX 2023).

Rocks greater than 3 inches in diameter would be carried out by hand or loaded into rock sacks and removed using the excavator (HELIX 2023). Large rocks and boulders greater than 24 inches in diameter may be broken up into manageable pieces using sledgehammers, pickaxes, expansive rock-breaking agent (e.g., expanding grout), or jackhammers and lifted by the excavator (HELIX 2023). The excavator may also be used to lift rocks bolted to a chain with shackles and position them onto the road for staging (HELIX 2023). All material will be transferred to an approved stockpile location where soils will be stockpiled and managed for load out into small-scale "bobtail" dump trucks, hauled off following a designated route, and disposed of at a local landfill (HELIX 2023)

Hand Rock Removal

Per the Creek HRMP, hand rock removal is performed by technicians using high incline rigging for fall protection who will manually remove the sidecast rock and transfer it up the slope by hand (HELIX 2023). Large rocks will be broken into smaller manageable pieces using hand tools before removal

(HELIX 2023). Smaller rock or rock fragments may be transferred into rock sacks for easier removal and carried out using frame packs and manual means (HELIX 2023). Rock will be staged on the side of the roadway, where it will be collected using a small loader or comparable equipment and transported to an approved staging area where the material can be hauled away for disposal (HELIX 2023).

Helicopter Removal

As described in the Creek HRMP, this method includes the use of a helicopter, such as a light-utility Bell 429, with a lift capacity of 1,500 to 2,000 pounds, fitted with enclosed steel baskets. The steel baskets can be covered with a safety net and lined to secure the rocks. Alternatively, the rocks can be placed into load bags and then loaded into the steel baskets (HELIX 2023). Rock will be transferred into rock sacks by ground crews and staged for the aerial operation to minimize flight time (HELIX 2023). The helicopter will hover approximately 100 to 150 feet in the air while ground crews fill the basket with rock sacks (HELIX 2023). Once the basket is full, the pilot will relocate the material to an approved staging location within the project area (HELIX 2023). A landing zone and refueling location, such as the Santa Barbara Airport, must be within 10 to 15 minutes of flight time from the project area (HELIX 2023).

SCE anticipates the full removal of all sidecast material remaining within the project area, with the possible exception of minor areas where constraints to full removal may exist (HELIX 2023). Table 3 summarizes sidecast removal methods by project site (Appendix A: Figure A-2).

Table 3. Sidecast Removal Method by Project Site

Sidecast Location	Sidecast Removal Method
Roadside Sidecast Areas 1–2, 4–16	Excavator with Hand and Guzzler
Sidecast 3, Sidecast 3 Outliers	Helicopter Removal
Creek Sites 1–4, Road Areas 1–2	Forklift with Hand and Guzzler
Creek Site 7, Roadside Sidecast Areas 17–19	Hand Rock Removal

1.1.3.3 SIDECAST REMOVAL IN UPLAND AREAS

Roadside Sidecast Areas 1–2 and 4–6: Excavator with Hand and Guzzler Removal

As described in the Creek HRMP, sidecast deposits occurring along Road Area Gate and up to Road Area 3 (except for SC-03) consist of thin layers of finer soil material intermixed with rocks and scattered boulders accumulated along the base of vegetation. These materials will be removed manually by technicians in combination with vacuum or guzzler trucks and a small excavator (HELIX 2023). This method will be performed on approximately 0.421 acre of sidecast deposits in SC 01, SC 02, and SC 04 through SC 06 and is expected to result in the full removal of the sidecast material at these locations (HELIX 2023). All removed sidecast material will be taken to an approved staging location.

1.1.3.4 SIDECAST REMOVAL FROM STREAM

Sidecast 03 and Sidecast 03 Outliers: Helicopter Removal

Large boulders and smaller rock and soil material are positioned in SC 03 and SC 03 Outliers. These are within Road Area 1 and cover approximately 0.257 acre approximately 300 feet from the roadside with no footpath or road access (HELIX 2023). Because of these limitations, SCE proposes using the

helicopter removal method to remove and relocate the material to an approved staging area (HELIX 2023).

Creek Sites 1–4 and Road Areas 1 and 2: Forklift with Hand and Guzzler

As described in the Creek HRMP, the area of Creek Sites 1 through 4 and Road Areas 1 and 2 total approximately 0.935 acre. The majority of sidecast deposits within Mission Creek and in tributaries consist of a mixture of small and moderately sized rocks with finer soil material and scattered boulders. These materials will be removed using the hand and guzzler removal method and in combination with a long-reach forklift to extract material (HELIX 2023). For large materials, technicians will manually break rocks and boulders into manageable pieces using sledgehammers, pickaxes, or, where necessary, drill and inject an expansive rock-breaking agent (e.g., expandable grout) to allow them to break into smaller pieces overnight (HELIX 2023). In accordance with the HMRP, rocks will then be manually loaded into baskets and lifted by a 12k reach forklift with a 24-foot length and 38-foot reach. The forklift would be positioned at designated staging areas or along existing access roads to transport sidecast materials to an approved staging location before disposal. This method is expected to result in the full removal of the sidecast material at these locations; however, potential constraints to sidecast removal on the slopes within Creek Sites 2, 3, and 4 were noted by SCE (HELIX 2023).

Table 2 shows the contingency buffer areas identified for each sidecast removal area. In accordance with the Creek HRMP, disturbances within the contingency buffer will be minimized, and sensitive resources will be flagged for avoidance. Following project activities, disturbance within the contingency buffer will be mapped and restored in accordance with the Creek HRMP (HELIX 2023).

Creek Site 7, Roadside Sidecast 17–19: Hand Rock Removal

Per the Creek HRMP, sidecast deposits at Creek Site 7 and Roadside Sidecast Areas 17–19 are located on Trail Road Area 2 and consist of scattered rocks intermixed with existing vegetation. These sites are only accessible by foot; however, the low volume and manageable size of the rocks allow for manual removal using the Jesusita Trail to access the sidecast areas (Helix 2023). The hand removal method was selected as the least impactful to resources and is expected to be used to remove all sidecast material at these locations (Helix 2023).

Roadside Sidecast Areas 7–16: Excavator with Hand and Guzzler Removal

As described in the Creek HRMP, sidecast deposits, occurring along roadside slopes of Road Areas 5–9, consist of boulders and rocks intermixed with the roadside berms and deposits immediately downslope of the roadside. These materials will be removed manually by technicians in combination with vacuum or guzzler trucks and a small excavator (Helix 2023). This method is expected for the full removal of the sidecast material at these locations, except in areas where sidecast was not deposited down slopes and, therefore, no removal is necessary. In such areas, berms will be adjusted to align with the specifications approved by Santa Barbara County and tamped down and stabilized.

Stabilize Stream Banks and Slopes

Per the Creek HRMP, if it is determined that the creek banks have been collapsed and/or scoured by the sidecast deposits, in addition to recontouring, it may be necessary to provide additional bank stabilization by hand placing cobbles and boulders to secure the soil in place and prevent future occurrences of erosion. Bank stabilization features would be designed and submitted to CDFW for approval, consistent with the adaptive management process, and incorporated into the monitoring and reporting program described in Section 8 of the Creek HRMP (HELIX 2023).

1.1.4 *Habitat Restoration*

1.1.4.1 NATIVE TREE RESTORATION/MITIGATION

The project proposes to address native tree restoration and mitigation by 1) completing remedial treatments to 39 impacted trees within Mission Creek and 2) planting trees within Mission Creek and Road Areas 1 and 2 and acorns in upland habitat areas. Remedial treatments to impacted trees are necessary to prevent further damage and stimulate recovery. These remedial treatments include the removal of rocks/soil from the base of the tree, pruning, and cutting or trimming roots (see Figures A-4a through A-4j). These activities are described in detail in Sections 6.1 and 6.2 of the Creek HRMP. Native tree remediation within the upland areas was completed in 2020 as a component of the Road Repair Project, which reduced and reconfigures roadside berms in Road Areas 1 through 4, completed rock scaling to remove loose materials from exposed rock surfaces, and installed a rock drapery over the exposed rock wall located down the road from the bridge in Road Area 4 (Helix 2023).

In addition to completing remedial treatments, the project will mitigate for impacted trees by planting a total of 90 trees or acorns. This planting quantity will achieve a mitigation ratio of 5:1 for impacts to trees whose impacts are considered "major" and a ratio of 1:1 for trees whose impacts are considered "moderate" as defined in Section 2.4 of the Creek HRMP. Within CDFW regulatory areas, the project will include the installation of 49 of the 90 trees or acorns to offset previous impacts to trees within CDFW regulatory areas. As a continuation of native tree restoration and mitigation in upland areas outside CDFW jurisdiction, the project will plant the remaining 41 acorns or trees within transitional woodland areas. Planting will be completed as a component of the native vegetation restoration described below. The number of trees planted as saplings or acorns may be adjusted based on the availability of materials, however, mitigation quantities will be retained.

Between the planting in Mission Creek and upland areas, a total of 90 trees will be established within the project area. Overplanting may be implemented to ensure mitigation quantities are achieved. Planted trees and acorns will be subject to 5-year success criteria, as described in Section 8 of the Creek HRMP (HELIX 2023). No trees will be removed as part of the project.

1.1.4.2 NATIVE VEGETATION RESTORATION

Temporary impacts to native vegetation will be restored in both woodland/forest and upland chaparral habitats along Mission Creek. Coast live oak (*Quercus agrifolia*) woodland and California bay (*Umbellularia californica*) forest habitats are the dominant habitats within Mission Creek and Road Areas 1 and 2, whereas upland habitats are dominated by ceanothus chaparral and associated native plant communities. These areas will be restored through the application of a native seed mix, planting of shrubs, trees, and cuttings as described in Section 6 of the Creek HRMP (see Figures A-4a through A-4j). Restoration of woodland and forest habitats will focus on controlling erosion and restoring forest canopy structure. Overall, nonnative species cover within the woodland and forest habitats is low; however, efforts to control nonnative species will be a component of the maintenance program in these habitats. Creek Site 7 also supports woodland habitat; however, because of the steep and unstable slopes, efforts will focus on the application of seed mix and erosion control. Approximately 1.06 acres of woodland and forest habitats will be restored as part of the project (Table 4). Section 3.3.7 of the Final HRMP describes the proposed Tunnel Trail Road enhancement activities.

Table 4. Proposed Project Revegetation and Enhancement by Vegetation Community

Vegetation Community	Acres*
Big Pod Ceanothus (*Ceanothus megacarpus*) Chaparral Alliance	1.16
Big Pod Ceanothus Chaparral Alliance, *Ceanothus megacarpus - Salvia mellifera* Association†	0.10
California Bay Forest and Woodland Alliance†	0.08
Coast live oak woodland Alliance, *Quercus agrifolia - Umbellularia* Californica Association†	0.63
Coast Live Oak Woodland and Forest Alliance	0.50
Hairy Leaf - Woolly Leaf Ceanothus Chaparral Alliance, *Ceanothus oliganthus* Association†	0.02
Holly Leaf Cherry - Toyon - Greenbark Ceanothus Chaparral Alliance, *Ceanothus spinosus* Association	0.02
Holly Leaf Cherry - Toyon - Greenbark Ceanothus Chaparral Alliance, *Ceanothus spinosus - Ceanothus megacarpus* Association	0.59
Developed/disturbed	0.77
Subtotal for Woodland and Forest Habitats	*1.21*
Subtotal for Upland Habitats (excludes developed/disturbed)	*1.89*
Total	**3.87**

† denotes a state sensitive natural community

Upland chaparral habitats within the project area are largely dominated by various species of ceanothus, with the presence of occasional oak trees as the canyon transitions to woodland habitats. Upland habitats occur along Spyglass Road and will be restored through the application of a native seed mix, select use of container plantings, and planting of acorns in transitional woodland areas. Native vegetation restoration of the upland chaparral habitats will focus on erosion control and nonnative species control during the maintenance period, specifically targeting mustards and other nonnative perennial species. Species diversity and shrub canopy are expected to recover naturally with effective control of nonnative species and erosion to minimize soil disturbance; however, this will be evaluated and addressed as part of adaptive management if recovery is not observed (see Section 8 of the Creek HRMP). Approximately 1.89 acres of upland habitats will be restored as part of the project (see Table 4).

Woodland and upland revegetation activities are designed to meet the project goal of restoring impacts to native vegetation (see Figures A-4a through A-4j). Sensitive plants and native trees will be monitored for recovery as a component of the monitoring program for the respective habitats, as described in Section 8.1.5 of the Creek HRMP (HELIX 2023). Restored areas will be evaluated annually and compared to unimpacted native habitats in adjacent areas. Implementation, materials, maintenance, monitoring, and reporting are described in the Creek HRMP (HELIX 2023).

1.1.4.3 SENSITIVE SPECIES REHABILITATION

The project would restore sensitive plants presumed to be directly impacted as a result of the December 2019 work. These sensitive species include Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*), Plummer's baccharis (*Baccharis plummerae* ssp. *plummerae*), and Hubby's phacelia (*Phacelia hubbyi*). Seeds and cuttings from unimpacted sensitive plants will be collected as described in Section 4.8 of the Creek HRMP (HELIX 2023) and seeded/planted in plots within suitable habitat integrated into the project area (see Section 6.9 of the Creek HRMP). Plots will be monitored and

maintained and subject to a 5-year success criterion, as described in Section 8 of the Creek HRMP (HELIX 2023).

One oscillated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*) was identified outside of the project area. There is no evidence of direct impacts to Humboldt lily nor has habitat for the species within the project area been confirmed. However, annual presence/absence surveys will be conducted as described in Section 8.1.5 (HELIX 2023).

1.1.5 *Staging and Storage Areas*

Developed/disturbed areas have been identified for use as staging, parking, and material storage throughout the project area. These areas are limited largely to compacted roadside and shoulders. However, if native vegetation was removed to support the road repair project (completed in November 2020) or is removed to support the current project, these areas will be restored in accordance with the Creek HRMP (HELIX 2023) and subject to ongoing monitoring and maintenance (see Figures A-4a through A-4j). Five of these staging areas previously used for the Road Repair Project, as well as an additional area at the south end of the intersection of Tunnel Trail Road and Mission Canyon Catway within Road Area 5 between SC 7 and 8 previously disturbed by an unknown party (non-SCE related), will be restored to native habitats following project construction.

1.1.6 *Schedule*

In accordance with the Creek HRMP, it is anticipated that work may begin as early as Winter of 2024 (HELIX 2023). As project work occurs within the creek and associated banks, it is essential that all removal, and associated revegetation and stabilization activities, occur under dry conditions to ensure work can be completed safely. Cutting installation and hydroseeding will be implemented prior to the rainfall season. If project activities are completed in a season not suitable for planting and seeding (i.e., summer), installation of these components would be postponed until an appropriate season as determined by the restoration ecologist. It is not anticipated that a hydromulch or tackifier will be needed prior to hydroseeding for stabilization, except possibly in the upland sidecast areas. Work may be paused and resumed in the following year if needed to avoid working during surface flows in Mission Creek.

2 BIOLOGICAL RESOURCES

This biological technical report details the results of the site assessments, vegetation community mapping, protocol rare plant and wildlife surveys, focused special-status species surveys, and habitat assessments for areas that will be restored within the project footprint. The sediment removal and restoration activities are proposed to restore grading-related rock and sediment discharge into and adjacent to Mission Creek and related tributaries in Santa Barbara County, California, in December 2019.

2.1 Methods

2.1.1 *Literature Review*

Before the field surveys, desktop reviews of existing literature, aerial imagery, site photographs, and data from the California Natural Diversity Database (CNDDB) and other publicly available databases were conducted by SWCA Environmental Consultants (SWCA) to investigate the potential occurrence of federal and state special-status species in the vicinity of the project area. For the purposes of this report, “vicinity” is outside of the project area and is defined as the open space areas immediately adjacent to the

project area and extending regionally to include the Santa Ynez mountains and surrounding foothills east of the city of Santa Barbara (see Figure A-1). The following resources were consulted to generate a list of potential special-status species, including species that are known to occur in the area and that require a field evaluation:

- CNDDB RareFind 5 (CDFW 2020a)
- Inventory of Rare and Endangered Plants containing species-specific habitat requirements for plant species (California Native Plant Society [CNPS] 2020a)
- U.S. Fish and Wildlife Service (USFWS) database of designated critical habitat (USFWS 2020a)
- The Jepson Manual: Vascular Plants of California, Second Edition (Baldwin et al. 2012)
- A Manual of California Vegetation (CNPS 2020b)
- CalFlora internet database (CalFlora 2020)
- California Herps: A Guide to the Amphibians and Reptiles of California (Nafis 2020)

The potential for a given special-status species to be present was evaluated based on the following: 1) the species' range, 2) habitat requirements of the species versus the major plant community/habitat within the project area, and 3) records or observations during previous field surveys. Special-status species that have been documented within 5 miles of the project area in the aforementioned resources were evaluated before and during surveys to determine their potential to occur and be impacted by the project.
All federally and state-listed species, state fully protected species, state sensitive wildlife species, and plant species with a CRPR (California Rare Plant Rank) of 1B or 2B that could be present based on the record search were evaluated in detail in this report; plant species with a CRPR of 3 or 4 were evaluated if observed during surveys. Plants with a CRPR of 1 or 2 generally meet the California Environmental Quality Act (CEQA) Section 15380 definitions of rare or endangered. Species listed as rare plants as part of the CNPS Rare Plant Inventory meet the definitions of the California Endangered Species Act and are eligible for state listing. The *Draft Rare Plants of Santa Barbara County* (Wilken 2018) list includes plants that are locally uncommon in Santa Barbara County (generally with fewer than 5 occurrences in the County) but are not necessarily globally rare; species on this list were considered when encountered. Additionally, species were not discussed in detail if there is no record of occurrence, or the species has been extirpated within 5 miles of the project area.

Evaluated species were designated in this report as either:

- Occurs – Species is definitively determined to be present based on field surveys.
- Likely – Species is very likely present and should be expected to occur if suitable habitat is present.
- Unlikely – Species could occur but would not likely occur on-site or be encountered. The habitat conditions are less than ideal for the species. The likelihood of the species being present on the project is very low given all available data, and/or species history/populations. Species would not be expected to occur during the project duration.
- Does Not Occur – Species would not occur because the project area is outside known or current range, lacks habitat or suitable conditions, and/or there is reasonable certainty to assume absence based on existing records.
- Absent – There is no suitable habitat for the species within the project area, or the area is outside the known range of the species. Alternatively, a species was surveyed for during the appropriate season with unequivocal negative results for species occurrence.

Special-status plant communities were also included in the literature review. Sensitive natural communities are defined by CDFW as those "communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects" (CDFW 2018). Vegetation communities with a state rank of 1, 2, and 3 are considered special-status by CDFW.

2.1.2 *Field Data Collection*

Biological surveys and monitoring were conducted throughout 2020 following the December 2019 work. Surveys were conducted during the appropriate blooming period for plants and appropriate activity seasons and conditions for wildlife to ensure detection if individuals, populations, or sign is present. This section summarizes each field survey and monitoring event that occurred since December 2019. Table 5 shows the dates, activities, and personnel conducting the field survey or biological monitoring. Appendix B provides photographs of special-status plants and wildlife, sidecast/impacted habitat, steelhead trout barriers, species-specific habitat, and contingency buffer areas.

Table 5. Summary of Field Surveys and Biological Monitoring

Date	Survey and Monitoring Activity	Personnel
December 27, 2019	Initial site assessments along Spyglass Road to determine habitat suitability for special-status species	Cristy Rice
January 8-9, 2020	Post-impact reconnaissance-level survey to estimate impacts to habitat suitable for special-status species	Maisie Borg, Cristy Rice
January 31, 2020	Upland habitat assessment at Jesusita trail, nesting bird survey	Par Singhaseni
February 2-5, 2020	Jesusita Trail nesting bird survey and biological monitoring	Par Singhaseni
March 12-13, 2020	Nesting bird survey, rare plant survey	Maisie Borg, Austin Xu
March 18, 2020	Nesting bird survey for emergency repair work along Spyglass Road	Ryan Myers
March 20-27, 2020	Biological monitoring for the emergency repair work along Spyglass Road	Ryan Myers, Marshall Webb, Austin Xu
March 30-April 1, 2020	Vegetation Community Mapping	Maisie Borg, Ryan Myers
April 21-22, 2020	Steelhead Stream Survey	Larry Travanti, HELIX; Patrick Martin, HELIX; Brian Bielfelt; SCE
April 21-22, 2020	Protocol Rare Plant Survey	Luis Aguilar, Maisie Borg; Brian Bielfelt, SCE
June 2020	Arborist Report for Mission Canyon Road Repair Project	Daniel Torres, HELIX
June 23-24, 2020	Protocol Rare Plant Survey	Marlee Antill, Maisie Borg; Brian Bielfelt, SCE
July 21, 2020	Protocol Rare Plant Survey	Luis Aguilar, Marlee Antill
August 25-26, 2020	Sidecast Sedimentation and Aquatic Habitat Surveys in Mission Creek	Patrick Martin, Helix; Brianna Ordung, Helix

Date	Survey and Monitoring Activity	Personnel
August 25-26, 2020	Fisheries Survey	Brianna Orduna, Helix Larry Travanti, Helix
September 17-November 6, 2020	Road Restoration Monitoring	Luis Aguilar, Marlee Antill
January 19-May 20, 2021	Spawning Grounds Surveys	Kyle Evans, CDFW; Hayley Sue, CDFW
October 22, 2021	Vegetation Community Mapping, Rare Plant Survey, Wildlife Survey	Ian Jackson, Forde Biological Consultants
October 22, 2021	Formal Sidecast 3 Rock Outliers sidecast volume survey, fisheries survey and jurisdictional area evaluation	Jim Burton, EcoKai; Todd Bear, EcoKai; Kimberly Dodds, EcoKai

Note: Personnel not employed by SWCA are annotated with their company or entity name.

2.1.3 *Initial Site Assessments*

SWCA biologists surveyed the surrounding habitat along the road and creek to evaluate habitat availability and quality for special-status species that were identified during the desktop review and assess the habitat for impacts. On December 27, 2019, SWCA biologist Ms. Rice conducted a post-activity assessment for impacts to sensitive wildlife and a pedestrian survey at four locations along Spyglass Ridge Road where dirt and debris dislodged by the maintenance activities dropped down the embankment toward Mission Creek. Additional post-impact field reconnaissance efforts followed on January 8 and 9, 2020, by SWCA biologists, Ms. Rice and Ms. Borg, to assess potential for special-status plants and wildlife species based on presence, sign, and habitat suitability.

2.1.4 *Vegetation Community Mapping*

From March 30 through April 1, 2020, SWCA botanists, Ms. Borg and Mr. Myers, mapped the vegetation communities within a 100-foot buffer of the roadbed from the access gate to the end of the roads and spurs. Additional vegetation data gaps in areas identified as outliers were surveyed and mapped on October 22, 2021, by Forde Biological Consultants biologist Mr. Jackson. Vegetation mapping followed the procedures outlined in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). Vegetation communities were characterized following descriptions provided in the *Manual of California Vegetation* and generally mapped to the alliance level (CNPS 2020b). When the association within an alliance was a state sensitive natural community but the overall alliance was not, the association was mapped (CNPS 2020b). The boundaries of the communities were recorded in the field using ArcGIS Collector and ESRI base maps, and the boundaries of the communities were refined during post-processing using ortho-imagery obtained from unmanned aerial systems flights. Current state sensitivities for natural communities were determined based on CDFW's California Natural Community List (CDFW 2020b).

2.1.5 *Protocol Rare Plant Surveys*

Field survey methods for plants focused on potential resources identified during the desktop review, but a comprehensive list of all plant species observed in the project area was also recorded (Appendix C: Table C-1). Nine plants with a CRPR of 1B or 2B were determined to have potential to occur within the project area based on records from the region and the presence of potentially suitable habitat (Appendix D: Table D-1). During the surveys, the botanists identified all plant species observed, including those with a CRPR

of 3 and 4. This floristic region encompassing the project area has two peak bloom periods for rare plants: an early bloom (March–April) and a later bloom (late May–July). The April 2020 survey allowed for detection of the earlier blooming plants, and a follow-up survey was completed in June and July 2020 for later blooming species, as well as locations that had been inaccessible because of high water in the creek. The 2019–2020 water year (defined as October 2019–September 2020) in Santa Barbara County was considered a wet year, with the rainfall levels listed as 128% of normal (County of Santa Barbara 2021). The occurrence of this substantial precipitation before the 2020 botanical surveys resulted in good conditions for detecting special-status plants.

The rare plant surveys followed the methods recommended by CDFW in *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). The purpose of the surveys was to determine the presence or absence of rare plants. As described in the CDFW protocols, each survey focused on "areas that [were] directly or indirectly impacted by the project" and adjacent areas "where direct or indirect project effects could occur." In some areas, the survey was narrowed to the edges of the road/trail because the slopes were too steep and vegetation too dense for safe travel, and in other areas, the survey extended out to 100 feet from the roadbed, in alignment with the protocol, "the level of effort required per given area and habitat is dependent upon the vegetation." Terrain that was too steep for safe pedestrian travel was surveyed using binoculars. This survey strategy aligns with the CDFW protocols and focused more intensive efforts on areas where rare plants had higher potential to occur, as determined based on microsite features consistent with their habitat requirements.

Plant species, subspecies, and varieties were identified to the lowest taxonomic level possible when encountered. Plants that could not be identified in the field were collected and later identified using the *Jepson eFlora* (Jepson Flora Project 2020). Locations of rare plants encountered were recorded using a GPS unit with sub-meter accuracy.

On April 21 and 22, 2020, SWCA botanists Ms. Borg and Mr. Aguilar, accompanied by SCE botanist Mr. Bielfelt, performed spring protocol rare plant surveys along the entire 3 miles of road and spurs east of the access gate. This spring survey focused on species that would be blooming early in the season or those visible year-round. These species include Ojai fritillary (*Fritillaria ojaiensis*), Santa Barbara honeysuckle, coastal sage scrub oak (*Quercus dumosa*), Sonoran maiden fern (*Pelazoneuron puberulum* var. *sonorense*), and Santa Ynez false lupine (*Thermopsis macrophylla*). The botanists also checked for early growth and/or bloom for May-blooming species, such as white-veined monardella (*Monardella hypoleuca* ssp. *hypoleuca*), umbrella larkspur (*Delphinium umbraculorum*), and black-flowered figwort (*Scrophularia atrata*).

Reference populations for several of the rare plants potentially present were visited to determine the bloom status and detectability around the time of the spring 2020 surveys, which is useful for understanding the likelihood of detecting the species if they had been present in the project area. If a rare species is confirmed to be detectable at reference populations near the survey area at the time of survey and the protocol survey fails yield detections, this supports a determination that the species is truly absent from the survey area, as opposed to being undetectable at the time of survey.

Ojai fritillary, Sonoran maiden fern (in Romero Canyon), and Santa Ynez false lupine were not observed within the project area, therefore known reference populations of these species were checked to determine whether the species were observable in 2020 around the time of the protocol surveys. Reference populations of late-flowered mariposa lily (*Calochortus fimbriatus*) were also checked to determine the growth status and detectability of the species in 2020. Because white-veined monardella is visible later in the year and would be more detectable during the second round of surveys, no reference populations were visited. Reference populations for umbrella larkspur and black-flowered figwort were not visited because

there were no accessible reference populations; however, because survey conditions were good, both would likely have been detected during the protocol surveys had they been present.

Surveys for late-blooming summer species were conducted on June 23 and 24, 2020, by SWCA botanists Ms. Borg and Ms. Antill. Surveys on June 23, 2020, focused on resurveying the same project area for the later blooming special-status species, including white-veined monardella and late-flowered mariposa lily, and documented plant species not previously recorded on-site. An intensive effort was undertaken to search for Sonoran maiden fern to approximately 1 mile downstream of the project area. SCE botanist Brian Bielfelt joined Ms. Borg and Ms. Antill in targeted surveys for the Sonoran maiden fern in a location that had been previously inaccessible because of high stream levels and steep slippery waterfalls earlier in the season. The reference population of Sonoran maiden fern within Mission Canyon was also visited. As documented in the *Mission Creek Revised Biological Impact Assessment Report* (SWCA 2020), the notes for the herbaria records all indicated the location to be at the confluence of the two forks of Mission Creek, even though the latitude/longitude was incorrect on the original records. An additional site visit was conducted on July 21, 2020, by SWCA botanists, Mr. Aguilar and Ms. Antill, to confirm identification of the late-flowered mariposa lily while in full bloom. Appendix D lists special-status plants detected or with the potential to occur in the study area.

2.1.6 *Special-Status Wildlife Habitat Assessments*

Special-status wildlife habitat assessments focused on potential resources identified during the desktop review. Based on the desktop assessment, eight species of special-status wildlife were determined to have potential habitat within the project area: steelhead (*Oncorhynchus mykiss irideus*) Distinct Population Segment [DPS] 10), western pond turtle (WPT) (*Actinemys marmorata*) (also now called southwestern pond turtle [*Emys pallida*]), California red-legged frog (*Rana draytonii*), Coast Range newt (*Taricha torosa torosa*), coastal whiptail (*Aspidoscelis tigris stejnegeri*), coast (Blainville's) horned lizard (*Phrynosoma blainvillii*), two-striped gartersnake (*Thamnophis hammondii*), and ring-tailed cat (*Bassariscus astutus*).

Several of these special-status species are aquatic or semi-aquatic; thus, the survey efforts focused primarily on Mission Creek and the adjacent riparian habitat. For the special-status amphibians and reptiles, SWCA performed site evaluations and habitat assessments of the general area within and along the upland terrain of Mission Creek and its tributaries to determine likelihood of occurrence. Upland habitat, roadways, and open areas with sparse vegetation were surveyed for the special-status lizards expected to occur in the area. Common and special-status species were identified using appropriate field guides for the region (Reid 2006; Sibley 2016; Stebbins and McGinnis 2018).

SWCA biologists performed visual surveys for special-status species at the project area, including a 150-foot buffer, and along Mission Creek where accessible. The surveys for special-status wildlife were conducted during the December 27, 2019, and January 8 and 9, 2020, initial site assessments and concurrently with the protocol rare plant surveys on April 20 and 21 and June 23 and 24, 2020. In addition, upland habitat along the Jesusita Trail was surveyed for special-status wildlife and nesting birds on January 31 and February 3 through 5, 2020.

HELIX performed a steelhead stream survey on April 21 and 22, 2020, and sidecast sedimentation and aquatic habitat and fisheries surveys in Mission Creek on August 25 and 26, 2020.

2.1.7 *Protocol California Red-legged Frog Survey*

SWCA followed protocol outlined by the USFWS in 2005 (USFWS 2005). Under this protocol, the assessment for California red-legged frog consists of two parts; first a habitat assessment and then field

survey if habitat is present. The results of the habitat assessment are required to be shared with the USFWS before field surveys so the USFWS biologist can validate the findings and recommend whether field surveys are needed. SWCA conducted a habitat assessment in accordance with the protocol and shared the results with the USFWS as required. The USFWS determined that field surveys were not required given the absence of suitable habitat (personal communication, Francesca Massarotto, SWCA, with Dou-Shuan Yang, USFWS, ca. 2020).

2.1.8 *Steelhead Stream Survey*

On April 21 and 22, 2020, HELIX conducted a survey of the stream to assess habitat for steelhead (HELIX 2021). SCE botanist Brian Bielfelt accompanied the team to assess the habitat suitability for Sonoran maiden fern. The focus of the survey was to identify pools, potential spawning areas, and stream blockages previously described by Stoecker (2002). HELIX biologists, Larry Travanti and Patrick Martin, surveyed approximately 1 mile of the upper reach of Mission Creek, from the concrete-encased culvert/debris basin to just below Mission Creek Bridge at a barrier just downstream of the impacted areas. The Mission Creek Bridge waterfall was not accessible to HELIX because of steepness of the canyon and the barrier; however, Mr. Bielfelt was able to scale the rock wall and assess and photograph the impact areas around the Mission Creek Bridge. HELIX also performed sidecast sedimentation and aquatic habitat and fisheries surveys in Mission Creek on August 25 and 26, 2020.

Kyle Evans and Hayley Sue of CDFW performed steelhead spawning ground surveys. Spawning ground surveys (hereafter "redd surveys") were conducted in accordance with standardized protocols developed by CDFW scientists for southern California as part of the California Coastal Monitoring Program (CDFW 2021). Redd surveys were conducted every 2 weeks between January 19 and May 20, 2021 (CDFW 2021). Teams of two to three surveyors walked reaches in an upstream direction recording observations on handheld data recorders (CDFW 2021). All fish observed were identified to species (CDFW 2021). For each steelhead observation, a total length estimate, location, and life history stage (when possible) were recorded (CDFW 2021).

2.1.8.1 SNORKEL SURVEYS

As described in the CDFW Mission Creek *O. mykiss* Monitoring 2020–2021 Memorandum (CDFW 2021), snorkel surveys were conducted in Mission Creek utilizing protocols from the Salmonid Field Protocol Handbook (Johnson 2007) and the Underwater Methods for the Study of Salmonids in the Intermountain West (Thurow 1994). Each survey field crew consisted of one snorkeler and one data recorder (CDFW 2021). Surveys were conducted on a bi-weekly basis from January-May 202.
The surveying biologists moved upstream and included any distinct habitat unit deemed "snorkelable" (CDFW 2021). A habitat unit was considered snorkelable if the mean depth was 0.7 feet and if the unit did not contain any potential hazards for the surveyor (CDFW 2021).

2.1.9 *Road Restoration Monitoring*

The Mission Canyon Road Repair Project Habitat Restoration Plan (HELIX 2021) was implemented from September through November 2020. SWCA performed construction monitoring of emergency road-related restoration throughout the project area and collected biological data. Road restoration activities were monitored with respect to special-status species, and daily monitoring reports documenting construction activities and impacts to biological resources were prepared. Before construction work, SWCA biologists marked environmentally sensitive areas (ESAs) for avoidance and conducted daily tailboard meetings to discuss ESAs, biological resources, and other environmental considerations with the crews before daily restoration work activities.

2.1.10 *Nesting Bird Surveys and Monitoring*

Nesting bird surveys and biological monitoring were performed during the road restoration monitoring when work was conducted during the nesting season (February 1–August 31). SWCA biologist Par Singhaseni conducted a nesting bird survey on January 31, 2020, and monitoring on February 2 through 5, 2020, for emergency work activities along the Jesusita Trail. One bushtit (*Psaltriparus minimus*) was observed constructing a nest along the trail on February 5, 2020, at approximately 10:30 a.m. The nest was subsequently monitored for the duration of work activities along the Jesusita Trail.

Nesting bird surveys and monitoring were also conducted from March 12 through 26, 2020, during additional emergency repair work, which included removal of debris and fence and concrete barrier installations along Spyglass Road. The nesting bird surveys and biological monitoring were conducted by SWCA biologists Austin Xu, Ryan Myers, Marshall Webb, and Maisie Borg. One bushtit nest was observed on March 12, 2020, between 6:45 a.m. and 11:00 a.m., and a second nest was initially observed on March 26, 2020, at approximately 10:30 a.m. Each nest was flagged with a 50-foot avoidance buffer and monitored until the end of the work activities.

2.1.11 *October 2021 Biological Survey*

On October 22, 2021, Forde Biological Consultants biologist Ian Jackson conducted a biological survey at two outlier locations in the project area. The outlier locations are at Road Area 1 and approximately 300 feet south of the bridge. The additional survey areas were identified in the *Mission Creek Habitat Restoration Plan* (HELIX 2022), which extended contingency buffers beyond the area initially surveyed. The purpose of the survey was to map gaps in the vegetation communities, document rare plants in the outlier locations and along the access route, and document wildlife. Mr. Jackson identified a population of Santa Barbara honeysuckle (approximately 15 individuals) at the Road Area 1 outlier and one Sonoran maiden fern within Mission Creek along the access route. At the second outlier location, three populations of Plummer's baccharis and two populations of Santa Barbara honeysuckle were on the banks of Mission Creek. No special-status wildlife species were observed. Common wildlife species documented included California scrub-jay (*Aphelocoma californica*), acorn woodpecker (*Melanerpes formicivorus*), yellow-rumped warbler (*Setophaga coronata*), common raven (*Corvus corax*), oak titmouse (*Baeolophus inornatus*), wrentit (*Chamaea fasciata*), bushtit, and western fence lizard (*Sceloporus occidentalis*).
In addition, EcoKai biologists, Jim Burton, Todd Bear and Kimberly Dodds, performed a formal fisheries survey and jurisdictional area evaluation.

3 RESULTS

3.1 Soils and Hydrology

Information on soils and hydrology are described in the report *Mission Creek/Tunnel Trail Road Grading Project, Jurisdictional Delineation, Santa Barbara, California* (Michael Baker International 2022) and are not addressed in this report.

3.2 Vegetation Communities and Land Cover

The vegetation mapping within the Mission Creek area resulted in the documentation of eight different plant communities and land cover types, four of which are deemed sensitive (Figure A-3) (CNPS 2020b). Figure 3). Table 7 provides a summary of total acreage for each vegetation community mapped within the project area during the March 30 through April 2, 2020, surveys and the October 22, 2021, surveys.

Table 6. Total Acres of Vegetation Communities and Land Cover Types Mapped within the Project Area

Vegetation Community*	Acres
Big Pod Ceanothus (*Ceanothus megacarpus*) Chaparral Alliance	0.85
Big Pod Ceanothus Chaparral Alliance, *Ceanothus megacarpus - Salvia mellifera* Association*	0.08
California Bay Forest and Woodland Alliance*	0.09
Coast Live Oak Woodland Alliance† *Quercus agrifolia - Umbellularia californica* Association*	0.71
Coast Live Oak Woodland and Forest Alliance	0.54
Hairy Leaf - Woolly Leaf Ceanothus Chaparral Alliance, *Ceanothus oliganthus* Association*	0.03
Holly Leaf Cherry - Toyon - Greenbark Ceanothus Chaparral Alliance, *Ceanothus spinosus* Association	0.03
Holly Leaf Cherry - Toyon - Greenbark Ceanothus Chaparral Alliance, *Ceanothus spinosus - Ceanothus megacarpus* Association	0.51
Developed/Disturbed	4.36
Total	**7.24**

Notes:

* State sensitive natural community.

†This non-sensitive community is upland and not mapped as riparian; however, native oaks are regulated within the county.

Acres are shown as rounded to the nearest hundredth decimal place; totals reflect sums of the unrounded numbers.

The non-sensitive communities found within the project area include:

- *Ceanothus megacarpus* Shrubland Alliance (big pod ceanothus chaparral)
- Hollyleaf Cherry (*Prunus ilicifolia*) – Toyon (*Heteromeles arbutifolia*) – Greenbark Ceanothus (*Ceanothus spinosus*) Chaparral with *Ceanothus spinosus – Ceanothus megacarpus* Association
- *Quercus agrifolia* Forest and Woodland Alliance (coast live oak woodland and forest)

The sensitive communities found within the project area include:

- *Ceanothus megacarpus – Salvia mellifera* Association with Big Pod Ceanothus Chaparral Association
- *Ceanothus* (*oliganthus, tomentosus*) Shrubland Alliance (Hairy-Leaf – Woolly Leaf Ceanothus Chaparral) With *Ceanothus oliganthus* Association
- *Quercus agrifolia – Umbellularia californica* Association with Coast Live Oak Woodland and Forest
- *Umbellularia Californica* Forest and Woodland Alliance (California Bay Forest and Woodland)

Coast live oak woodland and forest with *Quercus agrifolia – Umbellularia californica* Association and California bay woodland and forest are considered riparian vegetation communities.

3.2.1 *Woodland Alliances*

3.2.1.1 *QUERCUS AGRIFOLIA* FOREST AND WOODLAND ALLIANCE (COAST LIVE OAK WOODLAND AND FOREST)

Coast live oak woodland and forest is dominated by coast live oak and occurs on-site primarily within the ravines and along Mission Creek and the drainages that feed it. Coast live oak is an evergreen tree in the oak family (Fagaceae). This community is common throughout southern California from the coast to the inland foothills and mountains and is typically associated with waterways or the upper reaches of drainages. Occasional California sycamore (*Platanus racemosa*) and black cottonwood (*Populus trichocarpa*) trees were present in a few locations. Shrub species within the understory include buckthorns (*Ceanothus* spp.), bush monkeyflower (*Diplacus longiflorus*), toyon, laurel sumac (*Malosma laurina*), holly-leaf cherry, chaparral current (*Ribes malvaceum*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), and poison oak (*Toxicodendron diversilobum*). Conspicuous herbaceous species include bittercress (*Cardamine californica*), pipestems (*Clematis lasiantha*), coastal wood fern (*Dryopteris arguta*), California fuchsia (*Epilobium canum* ssp. *canum*), spotted eucrypta (*Eucrypta chrysanthemifolia*), California melic (*Melica californica*), hummingbird sage (*Salvia spathacea*), California figwort (*Scrophularia californica*), and canyon sunflower (*Venegasia carpesioides*). Santa Barbara honeysuckle (CRPR 1B.2), Plummer's baccharis (CRPR 4.3), and coastal sage scrub oak (CRPR 1B.1) occur within the coast live oak woodland and forest community.

Coast live oak woodlands and forest is not a state sensitive alliance (G5 S4); however, one association (*Quercus agrifolia – Umbellularia californica* Association) observed on-site is state sensitive (G3 S3). The *Quercus agrifolia – Umbellularia californica* Association occurs in Mission Creek near the crossing of an unnamed tributary west of Mission Creek and several other drainages associated with the Mission Creek watershed. In these areas, California bay (*Umbellularia californica*) is codominant with coast live oak in the tree canopy layer. Areas with *Quercus agrifolia – Umbellularia californica* Association would be considered riparian given the presence of California bay; however, all other coast live oak areas are upland and not riparian.

3.2.1.2 *UMBELLULARIA CALIFORNICA* FOREST AND WOODLAND ALLIANCE (CALIFORNIA BAY WOODLAND AND FOREST)

California bay woodland and forest is codominated by California bay and coast live oak; however, the bay has relative cover greater than 30% and can be classified as California bay woodland and forest. It occurs on-site only within a small area of Mission Creek; the areas adjacent to this community fall within the previously described *Quercus agrifolia – Umbellularia californica* Association. California bay is an evergreen tree in the laurel family (Lauraceae). Some California sycamores are present in a few locations. Shrub species within the understory include greenbark ceanothus, toyon, and poison oak. Conspicuous herbaceous species include wood fern and creeping snowberry (*Symphoricarpos mollis*).

California bay woodland and forest is a state sensitive alliance (G4 S3). It is also a semi-riparian vegetation community that occupies the riparian zone-areas directly adjacent to the streambed containing hydrophilic species such as coast live oak, black cottonwood, and California sycamore on-site.

3.2.2 *Shrubland Alliances*

3.2.2.1 *ARCTOSTAPHYLOS GLANDULOSA* SHRUBLAND ALLIANCE (EASTWOOD'S MANZANITA CHAPARRAL)

Eastwood's manzanita chaparral is codominated by Eastwood's manzanita (*Arctostaphylos glandulosa*) and chamise (*Adenostoma fasciculatum*); however, mixed stands with chamise are classified under this alliance. Eastwood's manzanita chaparral occurs on-site only on rocky, often north-facing slopes at the higher elevations on the eastern portions of the eastern limits of the study area. Eastwood's manzanita is an evergreen shrub in the manzanita family (Ericaceae). The shrub canopy is diverse and includes bigberry manzanita (*Arctostaphylos glauca*), buckthorns (primarily *Ceanothus megacarpus*), birchleaf mountain mahogany (*Cercocarpus betuloides*), thick-leaved yerba santa (*Eriodictyon crassifolium*), toyon, prickly phlox (*Linanthus californicus*), laurel sumac, and California snowdrop bush (*Styrax redivivus*). The conspicuous herbaceous species include Texas paintbrush (*Castilleja foliolosa*), hawkweed (*Hieracium argutum*), coffee cliffbrake (*Pellaea andromedifolia*), wavy-leaf soap-plant (*Chlorogalum pomeridianum* var. *pomeridianum*), hummingbird sage, and southern tauschia (*Tauschia arguta*). Chaparral yucca (*Hesperoyucca whipplei*) also occupies the herbaceous canopy layer below the more prominent shrubs.

Eastwood's manzanita chaparral is not a state sensitive alliance (G4 S4). It is an upland community.

3.2.2.2 *CEANOTHUS MEGACARPUS* SHRUBLAND ALLIANCE (BIG POD CEANOTHUS CHAPARRAL)

Big pod ceanothus chaparral is dominated by big pod ceanothus (*Ceanothus megacarpus* var. *megacarpus*) and codominant with chamise, laurel sumac, and greenbark ceanothus. It occurs on-site primarily on the south-facing slopes in well-drained soils. It was the most common vegetation community encountered during the vegetation mapping surveys. Big pod ceanothus is an evergreen shrub in the buckthorn family (Rhamnaceae). Other species that occur in the shrub canopy include birchleaf mountain mahogany, toyon, holly-leaf cherry, redberry (*Rhamnus crocea*), and black sage (*Salvia mellifera*). Conspicuous herbaceous species include coast morning glory (*Calystegia macrostegia* ssp. *cyclostegia*), common sandaster (*Corethrogyne filaginifolia*), blue dicks (*Dichelostemma capitatum*), lance-leaved liveforever (*Dudleya lanceolata*), and southern hedge nettle (*Stachys bullata*). The low-growing chaparral yucca also occupies the herbaceous canopy layer below the more prominent shrubs. Santa Barbara honeysuckle, Plummer's baccharis, and coastal sage scrub oak also occur within the big pod ceanothus chaparral community.

Big pod ceanothus chaparral is not a state sensitive alliance (G4 S4); however, one association (*Ceanothus megacarpus – Salvia mellifera* Association) observed on-site is state sensitive (G3 S3). The *Ceanothus megacarpus – Salvia mellifera* Association occurs in several small, discrete locations adjacent to the road where the shrubs are almost exclusively big pod ceanothus and black sage. It is an upland community.

3.2.2.3 *CEANOTHUS* (*OLIGANTHUS, TOMENTOSUS*) SHRUBLAND ALLIANCE (HAIRY-LEAF – WOOLLY LEAF CEANOTHUS CHAPARRAL ALLIANCE) WITH *CEANOTHUS OLIGANTHUS* ASSOCIATION

Hairy-leaf – woolly leaf ceanothus chaparral is dominated by hairy-leaf ceanothus (*Ceanothus oliganthus*) and occurs on-in a few discrete areas on-site typically at the margins of coast live oak woodlands before transitioning to the drier big pod ceanothus chaparral. Woolly leaf ceanothus (*C. tomentosus*) is absent

on-site, meaning all associations fall under the hairy-leaf ceanothus category. Hairy-leaf ceanothus is an evergreen shrub in the buckthorn family (Rhamnaceae). Other species that occur in the shrub layer include chamise, big pod ceanothus, toyon, laurel sumac, black sage, and poison oak. Emergent coast live oak trees were often found in this community. Shrubs occurred at high density in this alliance and relatively few herbaceous species were observed; the most prominent included pipestems and spotted eucrypta.

Hairy-leaf – woolly leaf ceanothus chaparral is a state sensitive alliance (G3 S3). It is also an upland community.

3.2.2.4 *PRUNUS ILICIFOLIA – HETEROMELES ARBUTIFOLIA – CEANOTHUS SPINOSUS* SHRUBLAND ALLIANCE (HOLLYLEAF CHERRY – TOYON – GREENBARK CEANOTHUS CHAPARRAL)

Hollyleaf cherry – toyon – greenbark ceanothus chaparral is codominated by holly-leaf cherry, toyon, greenbark ceanothus, and big pod ceanothus and is the second most common alliance documented on-site. It was often found in more sheltered ravines in transitional zones between coast live oak woodlands and the drier big pod ceanothus chaparral. All three species are evergreen shrubs belonging to the rose family (Rosaceae) or buckthorn family (Rhamnaceae). Other species that occur in the shrub canopy include birchleaf mountain mahogany, laurel sumac, heart-leaved keckiella (*Keckiella cordifolia*), black sage, and blue elderberry. Conspicuous herbaceous species include pipestems, blue dicks, golden yarrow (*Eriophyllum confertiflorum* var. *confertiflorum*), and California melica. Plummer's baccharis and Santa Barbara honeysuckle also occur within this community.

Hollyleaf cherry – toyon – greenbark ceanothus chaparral is not a state sensitive alliance (G5 S4); however, one association (*Prunus ilicifolia* ssp. *ilicifolia – Heteromeles arbutifolia* Association) observed on-site is state sensitive (G3 S3). The *Prunus ilicifolia* ssp. *ilicifolia – Heteromeles arbutifolia* Association occurs only at one location, a north-facing slope within the eastern portion of the study area. Hollyleaf cherry – toyon – greenbark ceanothus chaparral is an upland community.

3.2.3 *Unvegetated Areas*

Unvegetated areas consist of disturbed areas such as dirt roads and developed areas such as paved roads.

3.3 Floral Diversity

The spring rare plant survey—including a concurrent floral inventory—yielded a total of 193 plant species within the project area. The summer rare plant survey and concurrent floral inventory added eight species to the compendium. Of the 201 species documented, six are special status (see Table C-1 in Appendix C).

Spring rare plant survey efforts confirmed four special-status plant species occur within the project area: Plummer's baccharis (CRPR 4.3), Santa Barbara honeysuckle (CRPR 1B.2), Hubby's phacelia (CRPR 4.2), and coastal sage scrub oak (CRPR 1B.1).

The summer rare plant survey confirmed the presence of the late-flowered mariposa lily (CRPR 1B.3). The *absence* of the white-veined monardella (CRPR 1B.3) was also confirmed, and the location of the previously documented population of the Sonoran maiden fern (CRPR 2B.2) was observed just outside of the project area. Surveys from the streambed allowed SWCA to identify additional impacts to Plummer's baccharis and Santa Barbara honeysuckle on the mid- and lower slopes where the rockslides occurred.

In addition, one new special-status species—ocellated Humboldt lily (CRPR 4.2)—was found to occur within the project area.

The fall rare plant survey detected a previously undocumented Sonoran maiden fern individual downstream of the project area that serves as a new occurrence record for this species. In addition, new locations for Santa Barbara honeysuckle and Plummer's baccharis were documented within the project area.

Table D-1 in Appendix D provides further analysis of the 33 special-status plant species that were determined to occur or to have the potential to occur in the project area. See Figures A-4a through A-4j for the locations of special-status botanical resources mapped within the survey area. Species determined to have no potential to occur are not discussed in this section.

3.3.1 *Special-Status Plants*

3.3.1.1 WHITE SNAPDRAGON (*ANTIRRHINUM COULTERIANUM*)

White snapdragon is included in the *Draft Rare Plants of Santa Barbara County* list (Wilken 2018). It is an annual herb that blooms from April through July. The stems are weakly erect, between 0.5 and 1.5 m tall. This species is known from areas of San Diego, Orange, Riverside, San Bernardino, Los Angeles, Ventura, and Santa Barbara counties at elevations below 2,700 feet. It is often found in disturbed areas or following fire; in desert areas it typically occurs among shrubs. A specimen of white snapdragon was collected from Mission Canyon in 1951, although a precise location was not documented.

White snapdragon was documented during botanical surveys for the project between December 27, 2019, and April 21, 2022, but location data were not collected. As an annual herb that is often associated with disturbed upland areas, it has potential to occur in ruderal habitat along Spyglass Ridge Road.

3.3.1.2 PLUMMER'S BACCHARIS (*BACCHARIS PLUMMERAE* SSP. *PLUMMERAE*)

Plummer's baccharis (CRPR 4.3) is a perennial deciduous shrub that blooms August through November (Appendix B: Photograph B-1). The shrub has a distribution that includes the Western Transverse Ranges of the California Floristic Province and can be found in cismontane woodland, coastal scrub, and chaparral. Brushy canyons are the most typical microhabitat where it is found, especially shaded north-facing slopes, and rocky substrates at elevations of 15 to 1,400 feet. There are several Consortium of California Herbaria (CCH) (2020) occurrences within the immediate vicinity of the project area, albeit from the 1940s and earlier. Although the survey took place before the blooming period, plants could be distinguished from other co-occurring *Baccharis* species by the fine hairs along the stem, according to the Jepson eFlora treatment (Bogler 2012).

The species was determined to occur within the project area. Approximately 215 individuals were observed, mostly on the exposed rocky areas along the old road cuts of Spyglass Ridge Road and Mission Canyon Catway (Appendix B: Photograph B-2) during spring surveys (see Figures A-4c through A-4g and A-4i). The safer stream conditions during the June 24 survey allowed for a much better vantage point of the stream banks near the bridge, which previously were visible only with binoculars and mostly hidden by the sheer slope (Appendix B: Photograph B-3). Approximately 55 new individuals of Plummer's baccharis were mapped during the June 24 survey (see Figure A-4c). In addition, approximately 17 additional individuals of Plummer's baccharis were mapped during the fall survey adjacent to Creek Site 4 (see Figure A-4c).

3.3.1.3 LATE-FLOWERED MARIPOSA LILY (*CALOCHORTUS FIMBRIATUS*)

Late-flowered mariposa lily (CRPR 1B.3) is a perennial bulbiferous herb that blooms between June and August. It is known from the Coast Range within Monterey and San Luis Obispo Counties and the Western Transverse Range within Santa Barbara and Ventura Counties. The species often occurs in dry open coastal woodland habitat or chaparral between 890 and 5,400 feet in elevation. The species is threatened by grazing, development, road maintenance, and fire suppression. The nearest CNDDB record is from 1944 and is approximately 0.25-mile northwest of the project area. The nearest recent record, from 2011, is approximately 1.7 miles to the north near East Camino Cielo.

Approximately 350 individuals of a *Calochortus* species with only the basal leaves present (Appendix B: Photographs B-4 and B-5) were recorded within the eastern portion of the project from Road Areas 10 through 16 during the April 21, 2020, rare plant survey. During the June 23 and July 21, 2020, survey, the anther shape as well as the characteristic fringe on the margin of the petal were observed (Appendix B: Photographs B-6 and B-7), thus confirming this population as *Calochortus fimbriatus* (Jepson Flora Project 2020) (see Figures A-4h and A 4i).

3.3.1.4 UMBRELLA LARKSPUR (*DELPHINIUM UMBRACULORUM*)

Umbrella larkspur (CRPR 1B.3) is a perennial herb that blooms between mid-April and June. It is known from the Coast Range within Monterey and San Luis Obispo Counties to the Western Transverse Range within Santa Barbara and Ventura Counties, where it is found in foothill woodland and sometimes chaparral communities at elevations of 705 to 6,810 feet. The species is possibly threatened by grazing and hybridization with Parry's larkspur (*Delphinium parryi* ssp. *parryi*). The nearest CNDDB record, from April 23, 1965, is approximately 1.4 miles west of the project area in San Roque Canyon.

No *Delphinium* spp. were observed in the project area during the field survey on April 20 and 21, 2020. *Delphinium* spp. have obvious, diagnostic leaves even in vegetative form. Given the lack of any *Delphinium*, an assessment of the habitat, and surveying within the appropriate period for the species, it was deemed absent from the survey area.

3.3.1.5 OJAI FRITILLARY (*FRITILLARIA OJAIENSIS*)

Ojai fritillary (CRPR 1B.2) is a perennial bulbiferous herb that blooms between February and May. The species is known from the Coast Range within San Luis Obispo County and Santa Barbara into the Western Transverse Range within Ventura County. The species can be found in a variety of habitats including broadleaf upland forest, chaparral, cismontane woodland, and lower montane coniferous forest at elevations of 311 to 3,740 feet. However, it is typically associated with rocky slopes and river basins, preferring north-facing slopes in more mesic conditions (NatureServe 2020). The species is threatened by road maintenance and recreational activities. The nearest CNDDB record, from 2016, is approximately 2.4 miles northeast from the project near Gibraltar Road and a stream crossing.

Reference populations near the project area were checked the same week as the April 2020 survey and were found predominantly on north-facing slopes. The plants at the reference populations were blooming during the time of the survey. Other than slope aspect, the reference site conditions were similar to those found in the project area. The ridgeline of the Santa Ynez seems to be the dividing line for the species, with few to no records south of the ridgeline. Within the project area, most slopes are south-, east-, or west-facing, and neither the Ojai fritillary nor suitable habitat were observed during the field survey. Thus, the species was deemed absent from the project area.

3.3.1.6 OCELLATED HUMBOLDT LILY (*LILIUM HUMBOLDTII* SSP. *OCELLATUM*)

Ocellated Humboldt lily (CRPR 4.2) is a perennial bulbiferous herb that blooms between May and August and can be found throughout the central and south coast of California. Its large orange showy flowers are favored by gardeners, and mainland populations are threatened by horticultural collecting; island populations are threatened by herbivory. It is typically found in openings within chaparral, coastal scrub, cismontane woodland, lower montane coniferous forest, or riparian forest.

This species was determined to occur outside the project area within the project vicinity. One individual was observed approximately 30 feet east of the project area (the 100-foot buffer of the roadbed) during the June 24, 2020, survey (see Figure A-4c).

3.3.1.7 SANTA BARBARA HONEYSUCKLE (*LONICERA SUBSPICATA* VAR. *SUBSPICATA*)

Santa Barbara honeysuckle (CRPR 1B.2**)** is a perennial evergreen shrub that blooms between May and August. The shrub is known mostly from the Western Transverse Range in Ventura and Santa Barbara Counties. There is also a population known from Santa Catalina Island. This species occurs generally in chaparral, coastal sage scrub, and cismontane woodland at less than 3,280 feet in elevation. This species is threatened by development, road construction, and vehicles. The nearest CNDDB record is from 1944 and overlaps the project area. More recent records, from 2007, are approximately 2.8 miles southwest of the project area.

The species was determined to occur within the project area; approximately 80 individuals were observed during spring surveys (see Figures A-4a through A-4f). The safer stream conditions during the June 24, 2020, survey allowed for a much better vantage point of the stream banks near the bridge, which previously were visible only with binoculars and mostly hidden by the sheer slope (see Photograph B-3). Because of this, new occurrences of Santa Barbara honeysuckle (approximately 20 new individuals) were mapped (see Figure A-4c). The species was found predominantly on and alongside rocky road cuts within coast live oak woodlands and chaparral (Appendix B: Photographs B-8 through B-10). An additional population of approximately 15 Santa Barbara honeysuckle individuals were documented west of Mission Creek during the 2021 fall surveys.

3.3.1.8 WHITE-VEINED MONARDELLA (*MONARDELLA HYPOLEUCA* SSP. *HYPOLEUCA*)

White-veined monardella (CRPR 1B.3) is a perennial herb that blooms between May and October. The species is known only from the Santa Monica, Santa Ynez, and Sierra Madre Mountains in chaparral and cismontane woodland at elevations less than 4,920 feet. The species may be threatened by trail maintenance. The nearest CNDDB record, from 1944, is approximately 0.6 mile south of the project area near the Santa Barbara Botanic Garden. A more recent record from 2005 shows the species 1.4 miles west of the project area in San Roque Canyon.

Although this species was initially considered likely to occur given the proximity of occurrences and suitable habitat within the project area, this species was not detected during the summer survey on June 23, 2020. Because it was not identified within the project area, the 2005 reference population was surveyed on June 24, 2020, but this population also was not found. Notably, the 2005 occurrence was mentioned as being “scarce” and “needing fieldwork” in the CNDDB observation.

3.3.1.9 SONORAN MAIDEN FERN (*PELAZONEURON PUBERULUM* VAR. *SONORENSE*)

Sonoran maiden fern (CRPR 2B.2) is a pteridophyte with a disjunct distribution throughout southern California and can be found in a variety of coastal and inland habitats between 165 and 2,625 feet in elevation. It is on the *Draft Rare Plants of Santa Barbara County* list (Wilken 2018). It is also known from Arizona and south Mexico. The fern's general habitat is within meadows or riparian habitat around seeps. This species has a 1991 CNDDB record mapped within the project area, but based on the stream survey on April 21, 2020, the existing suitable habitat for the fern was observed to be at least 400 feet downstream of Mission Creek Bridge, in proximity to the convergence of the east and west branches of Mission Creek. The CCH (2020) collections, on which the CNDDB site is based, also indicate the population and habitat for the species is farther downstream, with some of the records describing the CNDDB site as being at the junction of the east and west branches of Mission Creek even though the latitude and longitude were recorded at a convenient location, such as at the bridge.

On June 24, 2020, the population at the 1991 CNDDB site was confirmed to be present at the confluence of the two forks, and no habitat was present at the bridge or rockslide areas (see Figure A-4c).
The location of the population documented on June 24, 2020, is situated east of and outside of the project area along the east branch of Mission Creek. In total, approximately 50 individuals were mapped at the confluence. Notably, the site of the historic population was much more mesic along the banks of the stream and thick with riparian brush—where seeps often occur (Appendix B: Photograph B-17)—and where the Sonoran maiden fern co-occurred with two other fern species, giant chain fern (*Woodwardia fimbriata*) and giant horsetail (*Equisetum telmateia* ssp. *braunii*) that were also found only in this area. Unlike the area around the confluence, the bridge has drier banks that did not have thick riparian vegetation and the co-occurring fern types were absent.

In April, a year 2011/2017 reference population site was visited 6.7 miles to the east, but individuals were not located and were possibly extirpated because of the 2017 Thomas Fire. However, many of the same fern species observed at the confluence of the forks were also present in similar habitat conditions at the reference population supporting a common ecological niche at the two recorded sites.

A previously undocumented individual Sonoran maiden fern below the Road Gate Area was documented by Ian Jackson during the October 21, 2021, vegetation community mapping and rare plant surveys (Photograph B-34; see Figure A-4a). This observation was confirmed through taxonomical evaluation by SWCA botanists via a representative photograph and serves as a new record for this species.
The specimen was differentiated from the morphologically similar subarctic ladyfern (*Athyrium filix-femina* var. *cyclosorum*) by the lack of serrations of the pinnules along the pinnae (the ultimate segments are pinnately lobed to toothed in subarctic ladyfern, and margins are entire in the Sonoran maiden fern). The margins are clearly visible in the October 22, 2021, photo (Photograph B-34). Additionally, in the general gestalt of the plants, the pinnae arrangement is more subopposite in Sonoran maiden fern and generally more alternate in subarctic ladyfern.

Based on the site assessment and review of the consortium records, the Mission Creek Revised Biological Impact Assessment Report (SWCA 2020) and results from the October 21, 2021, surveys, Sonoran maiden fern is absent from the project area. The three occurrences were below the Road Area Gate and Road Area 5 (see Figures A-4a and A-4c). The presence of existing individuals and populations of Sonoran maiden fern suggest the possibility of new occurrences establishing through downstream spore dispersal. However, as the closest occurrence is downstream and outside of the project area, any new establishment would likely also be outside of the project area and considerably downstream from any project-related disturbance.

3.3.1.10 HUBBY'S PHACELIA (*PHACELIA HUBBYI*)

Hubby's phacelia (CRPR 4.2) is an annual herb that blooms April through July. The annual herb has a distribution that includes the Western Transverse Range of the California Floristic Province and can be found on generally open gravelly or rocky slopes in chaparral, coastal scrub, valley, and foothill grassland at less than 3,280 feet in elevation. The nearest record is from 1956 and is 1.1 miles south of project area.

The species was determined to occur within the project area. Approximately 34 individuals were observed, typically on the gravelly areas along the road cuts of Spyglass Ridge Road and Mission Canyon Catway (Appendix B: Photographs B-11 and B-12) during spring surveys (see Figures A-4a, A-4b, A-4e, and A-4g). The safer stream conditions during the June 24, 2020, survey allowed for a much better vantage point of the stream banks near the bridge, which previously were visible only with binoculars and mostly hidden by the steep slope (see Photograph B-3). Because of this, one additional occurrence growing out of a portion of bank affected by the sidecast was mapped (Appendix B: Photograph B-13) (see Figure A-4c).

3.3.1.11 COASTAL SAGE SCRUB OAK (*QUERCUS DUMOSA*)

Coastal sage scrub oak (CRPR 1B.1) is a perennial evergreen shrub that blooms between February and April, possibly into August. It is on the *Draft Rare Plants of Santa Barbara County* list (Wilken 2018). This shrub has a coastal distribution from Santa Barbara to San Diego Counties. The species occurs in sandy or clay loam soils in chaparral and coastal sage scrub at elevations of 50 to 2,100 feet. The species is threatened by development, fire suppression, and vegetation management. It is possibly threatened by hybridization with inland scrub oak (*Quercus berberidifolia*). The nearest CNDDB record, from 1944, is approximately 0.7 mile south of the project area near the Santa Barbara Botanic Garden. A more recent record from 2015 shows this species approximately 1.1 miles southeast of the project near Rattlesnake Canyon Trail.

The species was determined to occur within the project area. Approximately 20 individuals were documented, mainly near the parking area at the trailhead (see Figure A-4a), and two individuals further along Spyglass Ridge Road (see Figures A-4b and A-4g); Appendix B: Photographs B-14 through B-16).

3.3.1.12 BLACK-FLOWERED FIGWORT (*SCROPHULARIA ATRATA*)

Black-flowered figwort (CRPR 1B.2) is a perennial herb that blooms between late April and July. The species is mostly known from Santa Barbara and San Luis Obispo Counties in a variety of habitats, including closed-cone coniferous forest, chaparral, coastal dunes, coastal scrub, and riparian scrub at elevations below 1,300 feet. The species-specific microhabitat preferences include sandy, diatomaceous shales, swales, and sand dunes. The species is threatened by energy development and mining. The nearest record, from 1971, is approximately 0.3 mile west of the project, but there is some doubt regarding the validity of the record: the CNDDB states that the identification should be checked. All records for this species within the vicinity of the project area note that records east of Gaviota may be misidentified or a hybrid with the more common California figwort. The project area also lies outside the bounds of the Jepson eFlora Geographic subdivisions listed in the bioregional distribution for the species treatment (Kersh 2012). The species is known to inhabit the Central Coast and Outer South Coast Ranges, whereas the project is directly in the center (vertically) of the western panhandle of the Western Transverse Ranges District. Therefore, evidence suggests that black figwort does not occur here because the project area is outside the known range, and the potential for existing nearby records to have been misidentified or hybridized.

Although *Scrophularia* were observed during the survey on April 20 and 21, 2020, they were easily identified as California figwort, with their light (not dark) red corolla and relatively non-constricted mouth. Thus, black-flowered figwort was deemed absent from the survey area.

3.3.1.13 SANTA YNEZ FALSE LUPINE (*THERMOPSIS MACROPHYLLA*)

Santa Ynez false lupine (state rare and CRPR 1B.3) is a perennial herb that blooms between April and June. It is known only in the Santa Ynez Mountains in Santa Barbara County in dry chaparral habitat. Specifically, the species requires sandstone, granitic, or disturbed sites at elevations between 3,280 and 4,590 feet. The species is threatened by fire suppression, nonnative plants, recreational activities, and road maintenance. The nearest CNDDB record, from 1955, is approximately 1.7 miles north of the project area.

This species was considered unlikely to occur given the distribution of records in the vicinity and the relatively low elevation of the project area compared with the average elevation of nearby reference populations. Reference populations were visited in the same week as the site survey (April 20–21, 2020) and although mostly not in bloom, conspicuous 4- to 5-foot-tall old growth was clearly visible at the reference sites. Similar old growth structures were not observed within the survey area, and thus the species now can be considered absent from the project area.

3.3.1.14 SANDPAPER VERVAIN (*VERBENA SCABRA*)

Sandpaper vervain is included in the *Draft Rare Plants of Santa Barbara County* list (Wilken 2018). It is a biennial or perennial herb that blooms from September to October. The stems are strigose to scabrous with blue to lavender calyces. Mature plants range from 15 to 40 inches in height. Sandpaper vervain is primarily known from areas in Santa Barbra County south to San Diego County, in the South Coast, San Gabriel Mountains, Peninsular Ranges, and San Jacinto geographic subdivisions. This species inhabits mesic and marshy areas below approximately 1,000 feet.

A specimen of *Verbena* was documented during botanical surveys for the project between December 27, 2019, and April 21, 2022, although the exact species is unknown. It has potential to occur in mesic or marshy habitat within the project area.

3.4 Wildlife

Table E-1 in Appendix E provides a list of the 53 species of animals identified during the field surveys and biological monitoring efforts in the project area. Wildlife species frequently observed included western fence lizard, turkey vulture (*Cathartes aura*), mourning dove (*Zenaida macroura*), acorn woodpecker, California scrub-jay, California towhee (*Melozone crissalis*), and Merriam's chipmunk (*Tamias merriami*). Some birds, such as Nashville warbler (*Oreothlypis ruficapilla*) and golden-crowned sparrow (*Zonotrichia atricapilla*), were present only during the non-breeding season.

3.4.1 *Special-Status Wildlife*

Eight special-status wildlife species were determined to have potential to occur in the project area and were analyzed further. The potential for a given special-status species to be present was evaluated based on the following: 1) the species' range, 2) habitat requirements of the species versus the major plant community/habitat within the project area, and 3) records or observations during previous field surveys. Special-status species that have been documented within 5 miles of the project area in the aforementioned resources were evaluated before and during surveys to determine their potential to occur and be impacted by the project. All federally and state-listed species, state fully protected species, and state sensitive

wildlife species that could be present based on the record search were evaluated in detail in this report. Table F-1 in Appendix F provides a description of the 28 special-status wildlife species that were determined to occur or to have the potential to occur in the project area. Species determined to be "unlikely" to occur, or to have "no potential" to occur are not discussed in this section.

Two special-status wildlife species were observed during the field surveys—Coast Range newt and two-striped gartersnake. A whiptail was observed by Felicia Nancarrow of SCE during a pedestrian survey of the project area on July 21, 2020. Because the individual observed was outside of the known range for the special-status coastal whiptail, it was determined to be a California whiptail (*Aspidoscelis tigris munda*). There is no USFWS-designated critical habitat within the project area. High-quality nesting bird habitat exists throughout the project area. April field surveys confirmed two of the special-status wildlife species occur within the project area: Coast Range newt and two-striped gartersnake.

3.4.1.1 STEELHEAD – SOUTHERN CALIFORNIA DPS (*ONCORHYNCHUS MYKISS IRIDEUS* POP. 10)

Steelhead – Southern California DPS (federally endangered) is found along the coast from San Diego to Santa Barbara Counties and exhibit two distinct life patterns: resident inland trout and anadromous steelhead (CalFish 2018). Steelhead occur in cool, clear, well-oxygenated water with spawning occurring in gravel-bottomed substrates, which are usually riffles or pool tails (National Oceanic and Atmospheric Administration Fisheries 2020; University of California, Davis 2020). The project area likely supported suitable anadromous habitat before the establishment of in-stream barriers to both upstream and downstream fish passage. Lower Mission Creek is considered the most viable stream for steelhead trout restoration within Santa Barbara County, and although they are frequently spotted in the creek, they are unable to migrate upstream and spawn because of significant anthropogenic barriers to migration (City of Santa Barbara 2020). Adult steelhead trout have been observed to enter the Mission Creek Estuary (documented in 2001 and 2008) and migrate approximately 0.7 mile northwest upstream and become restricted at the Cota Street and Bath Street bridges as the channel becomes fully concrete-lined (HELIX 2021). Other ample cobble/gravel substrates for spawning found further upstream are not accessible to the fish because of the many lower Mission Creek barriers. According to two seasons of surveys in 2001 and 2002 by Stoecker (2002), steelhead population in upper Mission Creek had been extirpated because of several barriers to steelhead passage, which includes an impassable barrier on Mission Creek just upstream from the confluence with Rattlesnake Creek. However, several remediation projects have been completed along lower Mission Creek including the Lower Mission Creek Concrete Channel project in 2013 (Passage ID 8926), the Upper Concrete Channel project in 2012 (Passage ID 8927), and the Tallant Road Bridge project (Passage ID 7915). These three remediation projects are listed as unconfirmed fish response but may extend migration further upstream by approximately 4 miles (CalFish 2018).

During the December 2019 initial site assessments of the 500-foot section below Mission Creek Bridge in the upper section of the creek conducted by SWCA, the size of in-stream boulders along the creek was noted as too large to support steelhead passage.

The upper portions of the stream that were surveyed April 2020 by SCE and HELIX confirmed the presence of several existing natural and unnatural barriers (Appendix A: Figure A-5; Appendix B: Photographs B-18 through B-20), previously documented by CDFW (2017) and as reported in HELIX 2021 (see Appendix G). They can be categorized as follows:

1. Old Mission Dam to the Stone Dam (Passage ID 7922-7925), approximately 0.4 mile. Before this project, anadromous steelhead were blocked from migrating upstream by the Old Mission Dam, which has prevented migration into the upper stream for more than 200 years. Upstream of the Old Mission Dam are several other human-made structures that have created a complete blockage, including the debris dam with culvert (Passage ID 7923) and a small stone dam.

Although Stoecker (2002) identified the culverts as partially impassable, they may actually be completely impassable because when the water level would be high enough for fish to pass through the culvert, the water velocity would be too great. These three human-made barriers prevent any migration of steelhead.

2. Stone dam to bedrock waterfall (Passage ID 7925-7927), approximately 0.3 mile. Just upstream of the stone dam is a completely impassable natural barrier, a waterfall. However, upstream of this barrier is an approximately 0.3-mile stretch with pools or potential habitat. It is within this stretch of creek that fish (species unconfirmed) have been observed as recently as April 21, 2020. It is also the best possible spawning location for any re-introduction efforts. It is possible there is a remnant resident population of steelhead inhabiting this part of the creek that has been isolated from ocean access for 200 or more years because of historic construction of the Old Mission Dam. However, no fish were observed upstream of Rattlesnake Creek during complete snorkel and foot survey of upper Mission Creek in 2001 and 2002 (Stoecker 2002). During a survey of the creek in April 2020 by HELIX, an unknown species of 3- to 5-inch-long fish was observed approximately 225 feet downstream of the location of a previous (unknown year) O. mykiss observation reported to CDFW (HELIX 2021).
3. Bedrock waterfall to Mission Creek bridge (Passage ID 7927-7631), approximately 0.4 mile. At least three impassable barriers (i.e., natural waterfalls) and fishless pools are between the impact areas and the previous fish observations. The impassable natural barriers in this stretch would further prevent steelhead from occurring in the impact areas. Even if reintroduction and spawning could occur upstream of the stone dam, these natural waterfalls present significant impediments for fish being able to use areas upstream. Upstream of the Mission Creek bridge was identified as non-habitat by Stoecker (2002).

HELIX performed a steelhead stream survey on April 21 and 22, 2020, and sidecast sedimentation and aquatic habitat and fisheries surveys in Mission Creek on August 25 and 26, 2020. The results of the 2020 habitat assessments and the 2021 focused survey are detailed in the Mission Creek Fisheries Assessment (HELIX 2021) (Appendix G). The 2020 fisheries assessments also provided additional data to support the potential for occurrence determinations for Coast Range newt and two-striped gartersnake. Individual evaluations of California red-legged frog and steelhead are described below.

In all surveys, the habitat mapping survey focused on pool habitats, from which a series of fluvial geomorphological measurements were collected within the 1,864-meter (m) reach (HELIX 2021). The goal of this survey was to measure the length, width, and depth of all wetted areas within each pool habitat unit, to evaluate the percentage of substrate types (silt, sand, gravel, cobble, boulder, bedrock) within each habitat, and to determine depths of newly deposited substrates (especially fine sediments, i.e., sand and gravels) HELIX 2021). The results of the sedimentation surveys are included as an attachment to the 2021 Mission Creek Fisheries Assessment (HELIX 2021) (see Appendix G).

CDFW conducted a total of 34 spawning ground—or "redd"—surveys from the estuary to upstream of the Mission Dam in Mission Creek between January 19 and May 20, 2021. No redds or bankside trout were observed. Additionally, CDFW conducted snorkel surveys between July 15 and August 2, 2021, and drought monitoring in 2021. CDFW identified one *O. mykiss* in a pool upstream of the Mission Creek debris basin (downstream from the project area) during the snorkel surveys and observed a second trout in the same pool from the bank during a subsequent visit (CDFW 2021). CDFW opines that "[t]hese fish may represent the last of the Mission Creek resident *O. mykiss* population" (CDFW 2021). CDFW concludes that "[p]reserving the remaining trout is crucial to the survival and possible recovery of the Mission Creek *O. mykiss* population. However, efforts to preserve these two individuals are complicated by current drought conditions and the unknown impact upstream restoration activities," noting during the

most recent drought survey that "the pool containing the two *O. mykiss* had no inflow or outflow, and dissolved oxygen below ideal levels" (CDFW 2021).

Although habitat exists downstream in Mission Creek, this habitat is unable to be used and will always remain unoccupied by anadromous steelhead without continual reintroductions and/or removal of barriers that would likely result in impacts to cultural resources (e.g., Old Mission Dam) and other human-made features. The potential spawning habitat at the Mission Creek Bridge pool could not support steelhead in its current existing condition because 1) there is no connectivity to existing populations; 2) the number of natural barriers in the upper stream (Passage ID 7927-7631, as described in #3 above) creates a highly fragmented habitat; 3) there are only 500 feet of stream between two significant impassable natural barriers to fish movement; 4) the areas upstream of the Mission Creek Bridge were determined to be non-habitat by Stoecker (2002), meaning the pool is at the very upper limits of potential habitat; and 5) previous surveys generally find fish approximately 0.5 mile downstream, where the habitat is more contiguous, as noted above.

The many existing natural and anthropogenic barriers upstream and downstream from the project preclude passage for anadromous steelhead fish to migrate to and from creek to ocean habitats. Anadromous steelhead were absent within the project area. Previous observations of potential fish occurrences could have been misidentified, introduced, or a remnant non-migratory resident trout population because migrating anadromous steelhead are physically excluded from Mission Canyon. If resident trout are present, a self-sustaining population that can migrate to and from creek to ocean is unlikely without creating fish passage and re-introduction provided by human intervention.

A fisheries assessment by HELIX cites anecdotal reports and documented sightings of residential rainbow trout in Mission Creek that combined suggest the potential presence of fish rearing habitat (HELIX 2021) (see Appendix G).

3.4.1.2 CALIFORNIA RED-LEGGED FROG (*RANA DRAYTONII*)

California red-legged frog (federally threatened and California species of special concern [SSC]) is found in aquatic habitats, including ponds, marshes, and creeks. Habitat suitability for California red-legged frog consists of dense, shrubby riparian vegetation associated with deep, still, or slow-moving water (Jennings 1988; Nafis 2020). The vegetation most suited to California red-legged frogs is arroyo willow, cattails (*Typha* spp.), and bulrushes (*Schoenoplectus* spp. and *Scirpus* spp.) (Jennings and Hayes 1989, 1994). The survey area did not contain the vegetation or water requirements needed to support California red-legged frog in the watershed. Ventura USFWS biologist Dou-Shuan Yang was consulted to determine whether a protocol-level survey was necessary. His conclusion was that a focused survey was not appropriate as the project area was too high in the watershed with no suitable habitat present, supporting SWCA's habitat assessment (personal communication, Francesca Massarotto, SWCA, with Dou-Shuan Yang, USFWS, ca. 2020). California red-legged frog was determined to be absent within the project area because the vegetation community that would provide habitat is the wrong type and too sparse and connectivity is poor, as the nearest occurrence is 3.5 miles away; USFWS concurs that there is a lack of habitat.

3.4.1.3 SOUTHWESTERN POND TURTLE (*EMYS PALLIDA*)

WPT (under review by the USFWS for listing as an endangered or threatened species and California SSC) ranges from north Baja California, Mexico into Oregon, Washington, USA to British Columbia, Canada (mostly west of the Sierra Nevada-Cascade crest). WPT is now split into two species: southwestern (*Emys pallida*) and northwestern (*Actinemys marmorata*) pond turtles. The project overlaps the range of the southwestern pond turtle (SWPT). SWPT is typically found at elevations ranging from sea level to

approximately 4,980 feet (Stebbins 2018). The SWPT uses a wide variety of permanent and ephemeral aquatic habitats and may spend a significant amount of time in upland terrestrial habitats as well. SWPT aquatic habitats typically include permanent freshwater ponds, lakes, marshes, streams, and rivers (Bury and Germano 2008; Bury and Holland 1993; Rathbun et al. 1992). It favors sites with deep pools and an abundance of basking sites, such as partially submerged logs or rocks, matted emergent vegetation, floating aquatic vegetation, or exposed shorelines. Undercut banks, root masses, and boulder piles provide underwater escape cover, especially for small hatchlings and smaller turtles that behave more cryptically and are more susceptible to predation (Bury and Holland 1993).

Terrestrial habitat requirements are variable throughout the range but must include basking sites and nesting habitat. While emergent basking sites are preferred because they offer some protection from terrestrial predators and quick escapes to deep water, terrestrial basking sites are also used. Terrestrial basking sites include mud banks, rocks, logs, and root wads on the bank, and are never far from water. Nesting occurs terrestrially, usually in open low-slope areas, with sparse vegetation consisting of grass and forbs, a few meters to over a hundred meters from the watercourse. The nest site typically has good exposure to the sun and compact soil (Holland 1994; Reese 1996). Suitable nest habitat near aquatic environments may often be limited (Holland 1994).

In most areas, terrestrial overwintering habitat is also required (Reese 1996). However, overwintering can be aquatic or terrestrial (Holland 1994). Terrestrial overwintering site characteristics are highly variable, but the microsite usually includes a thick duff layer (Holland 1994). Terrestrial overwintering sites include a much broader array of vegetation structures than nest sites. Shrubby, open, and forested environments have all been used by SWPT for overwintering (Holland 1994; Rathbun et al. 1992; Rathbun et al. 2002). Overwinter sites typically include terrestrial refugia (typically buried under 5–10 centimeters of leaf litter), burial in the substrate of aquatic habitats, or in undercut banks along streams (Holland 1994; Rathbun et al. 1992; Rathbun et al. 2002). Throughout their range, hatchling SWPTs overwinter in their natal nests (Bury and Germano 2008; Holland 1994). SWPTs often emerge from their terrestrial refugia to bask and/or move to other locations during the winter (Bury and Germano 2008; Holland 1994; Rathbun et al. 2002).

SWPT is known to occur in suitable habitat throughout Santa Barbara County. Suitable open nesting habitat is not present in the project area. SWPT has not been observed in the project incidentally or during previous project surveys, but suitable aquatic habitat for dispersal and overwintering is present within the drainages, primarily downstream. As a result, this species is considered likely to occur in the project vicinity, primarily downstream of Mission Creek Bridge and within other tributaries in the watershed.

3.4.1.4 COAST RANGE NEWT (*TARICHA TOROSA*)

Coast Range newt (SSC) is a semi-aquatic amphibian endemic to California, typically found along the coast from Mendocino County to San Diego County. In southern California, they are often found in drier habitats including chaparral, oak woodland, and grassland. Throughout much of the year, terrestrial adults are generally inactive in subterranean refuges, typically rodent burrows or beneath rocks and logs. Adults emerge during the wet weather and are aquatic during the breeding season, often remaining near breeding habitat several weeks. Breeding habitat for this species includes slow-moving streams, ponds, and reservoirs (Morey 2000; Nafis 2020). Habitat was found to be suitable for Coast Range newt within the project area, which has an overlapping CNDDB occurrence from 1986 (Appendix B: Photographs B-21 and B-22). Coast Range newt has been confirmed as present within Mission Creek (Appendix B: Photograph B-23). At least 15 individuals, including one gravid female, seven egg masses, and an active copulation, were observed on April 21, 2020, during the steelhead survey performed by HELIX and SCE downstream of Mission Creek Bridge (see Appendix G; see Figure A-6).

3.4.1.5 COASTAL WHIPTAIL (*ASPIDOSCELIS TIGRIS STEJNEGERI*)

Coastal whiptail (SSC), also referred to as the San Diegan tiger whiptail, is found in a wide range of ecosystems, including chaparral, woodland, and riparian areas. This species is diurnal, often observed actively moving and foraging through heavy brush. Coastal whiptail generally prefers open areas with sparse foliage but will often use heavy brush or burrows for cover when threatened. Coastal whiptail is one of two subspecies of whiptails that occurs in Santa Barbara County, the second subspecies is the California whiptail, which is not a special-status species. Coastal whiptail occurs along the eastern boundary of Santa Barbara County, while California whiptail is found throughout the rest of the county (Nafis 2020). There is suitable habitat for whiptails throughout the project area, especially near Jesusita Trail where there is a mixture of open space and ample vegetation cover. A whiptail was observed on-site by Felicia Nancarrow of SCE on July 21, 2020. Based on the known ranges of the two subspecies, the individual was most likely the California whiptail.

3.4.1.6 COAST (BLAINVILLE'S) HORNED LIZARD (*PHRYNOSOMA BLAINVILLII*)

Coast (Blainville's) horned lizard (SSC) is a diurnal, flat-bodied lizard found in grasslands, coniferous forests, woodlands, and chaparral. This species is most often found in open areas, with loose soil, often near ant hills or along roadways (Nafis 2020). Like all horned lizards, the coast horned lizard has a specialist diet, mostly consisting of native ants, which are often an indicator for the presence of horned lizards. Although no anthills were observed during the field surveys, the roadways and trails are generally suitable for this species. Records for this species are as close as 2.5 miles to the southeast of the project but are relatively old, with the most recent from 1993. Coast horned lizard is rarely encountered because of its behavior and cryptic coloration. This species is unlikely to occur along the fragmented suitable habitat on the flatter less vegetated areas, and the roadway and trails frequented by pedestrians.

3.4.1.7 TWO-STRIPED GARTERSNAKE (*THAMNOPHIS HAMMONDII*)

Two-striped gartersnake (SSC) is a highly aquatic species occurring in ponds, creeks, and cattle tanks, especially in rocky habitats. Vegetation communities associated with this species ranges from oak woodland, willow, sparse coniferous forest, chaparral, and coastal sage scrub. The diet of two-striped gartersnake includes aquatic organisms, such as fish and their eggs, amphibians and their larvae, leeches, and earthworms (Nafis 2020). This species overwinters in small mammal burrows, crevices, or under rotting logs, and emerges in the spring to breed (Kucera 2000). Habitat within Mission Creek is ideal for this species, and CNDDB records show observations in 2013 within the creek. Two individual two-striped gartersnake were observed during a steelhead trout survey downstream of Mission Creek Bridge on April 21, 2020 (see Figure A-5).

3.4.1.8 RING-TAILED CAT (*BASSARISCUS ASTUTUS*)

Ring-tailed cat (fully protected species) is a medium-sized nocturnal carnivore found in the raccoon family (Procyonidae). It ranges from the southern portion of Oregon to Mexico and as far east as Kansas and Oklahoma in a wide range of habitats, including desert, chaparral, forest, and riparian habitats, often near rocky outcrops (Goldberg 2003). Ring-tailed cats generally use hollow trees, logs, snags, and cavities in rocky areas for cover and are typically found no further than 0.6 mile from a permanent water source (Ahlborn 2005). Mission Creek appears to have some small permanent water features within 0.6 mile of the project area. This species is highly elusive and rarely observed throughout its range, likely because of its nocturnal habits and solitary nature.

Data on population density and relative abundance among habitats are very limited, and the species was last studied in California in the 1980s. The data suggest that ring-tailed cat populations are relatively low in Santa Barbara County (Orloff 1980). According to the Lower Mission Creek Interim Report (USACE 1987), ring-tailed cat was recorded historically along Mission Creek before 1977. However, the report also shows negative results for the species during surveys in 1983 and 1987. Occurrence data for ring-tailed cat are not tracked in CNDDB; therefore, there are no records for the species within the project vicinity. Other publicly available online resources, such as iNaturalist (2020), show sporadic observations throughout southern California. As of the preparation of this report, there was one confirmed sighting in 2021 within Santa Barbara County, approximately 12 miles west of the project area (iNaturalist 2020).

In addition, the lack of observations may be because of existing disturbance in the area. Much of the project is adjacent to developed areas, while the farthest portions are within 1 mile of development. The roads and trails within the project area are subject to daily heavy pedestrian traffic. Recent research on ring-tailed cat and other carnivores in the Southwest indicates there is generally a negative association with roads and edge habitat (Baker 2018). The riparian and other woodland habitat within the project area is suitable for the species to move through the area, and portions of Mission Creek are isolated from disturbance and may provide appropriate refuge and potential nocturnal watering sites. However, the species is unlikely to occur or be encountered within the project area based on its elusive behavior, the relatively small and scattered conditions of permanent water sources in the vicinity, and historic population data. The species is also strictly nocturnal and not encountered during the daytime hours.

3.5 Wildlife Corridors and Habitat Linkages

Wildlife corridors are areas with open space large enough to allow for the dispersal of mobile species, such as mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), and coyote (*Canis latrans*), from one area of open space to another. Wildlife movement corridors are defined on both a regional and on a local basis. Regionally, the project area lies in the southern portion of the Santa Ynez Mountains. The project is at the interface of urban habitat and open space. The residential area to the south of the project is not considered a wildlife corridor. However, the area to the north, east, and west of the proposed consists of open space as part of the Santa Ynez Mountains. Wildlife may travel through the project area to these natural areas.

Mission Creek and its tributaries may also provide habitat linkages for aquatic species, such as fish and amphibians. However, based on the data collected during the steelhead stream survey, there are known barriers that would prevent steelhead and other aquatic species from traveling upstream.

3.6 Nesting Birds

The project area contains shrubs and trees that provide suitable habitat for nesting birds. Numerous bird species were observed during the winter and spring nesting bird surveys and are expected to nest within the project area, and active bushtit nests were confirmed present (see Table E-1).

4 AVOIDANCE AND MINIMIZATION MEASURES

Proposed work in the project area to restore impacted areas may have impacts to sensitive plant and wildlife species. The following APMs will reduce additional impacts to sensitive plant and wildlife species, when possible. APMs will be implemented before and during construction and will ensure that impacts to sensitive resources are avoided and minimized to the most practical extent possible.

4.1 Applicant Proposed Measures

4.1.1 *General Environmental Requirements*

- APM-ENV-1: Tailboard Briefing. A tailboard briefing will be conducted every day prior to the start of work to communicate safety and environmental requirements for the planned work activities and stop work protocols. (Timing: Phases 1, 2, and 3).
- APM-ENV-2: Approved Work Areas. All ground disturbance, vehicles, and equipment must remain in approved work areas, including approved access routes and work areas defined in the project scope. Approved work areas include the following: sediment and rock disposal removal areas; stream, bank and slope stabilization areas; upland sidecast removal areas; native tree restoration and mitigation areas; native vegetation restoration areas; berm stabilization areas; construction areas; staging and storage areas; and contingency buffer areas. (Timing: Phases 1, 2, and 3).
- APM-ENV-3: Delineation of Approved Work Areas. To minimize temporary impacts to native habitats adjacent to Project areas, flagging and/or temporary fencing will be installed during Site Preparation Activities and prior to Habitat Restoration Installation. Global Positioning System (GPS) coordinates of the areas shall also be taken. The limits of disturbance, including the upstream, downstream, and lateral extents on either side of any stream adjacent to the Project impact footprint, will be clearly defined. Monitoring personnel (biological and wetlands) will review the limits of disturbance during Site Preparation Activities and prior to materials/equipment mobilization and Habitat Restoration Installation. Approved limits of staging and stockpiling areas will be clearly defined. Sensitive resources will be flagged for impact minimization and avoidance. (Timing: Phases 1, 2, and 3).
- APM-ENV-4: Worker Environmental Awareness Program (WEAP). During Site Preparation Activities and prior to materials/equipment mobilization and Habitat Restoration Installation, a Worker Environmental Awareness Program (WEAP) will be developed. All workers on the Project site must receive WEAP training prior to beginning work on the Project. The WEAP training will identify the biological monitors who have stop-work authority and will describe how the action would be implemented in a situation where work must be halted. (Timing: Phases 1, 2, and 3). In addition, all construction personnel will receive the following:
    1. Instruction on the individual responsibilities under the Clean Water Act, the project SWPPP, site-specific best management practices (BMPs), and the location of Safety Data Sheets (SDSs) for the project.
    2. Instructions to notify the supervisor and regional spill response coordinator if a hazardous materials spill or leak from equipment occurs, or on the discovery of soil or groundwater contamination.
    3. Instruction on ensuring all food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in closed trash containers. Trash containers will be removed from the project area as required and will not be permitted to overflow.
    4. Instruction that non-compliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the project.

  Upon completion of the WEAP training, all workers shall sign a form stating that they attended the training and understand all protection measures. These forms shall be filed at the worksite offices and be available to CDFW or other regulatory agencies upon request.

- APM-ENV-5: Material Management. Any refuse material that needs to be hauled off-site will be taken to an SCE-approved disposal facility. (Timing: Phases 1 and 2).
- APM-ENV-6: Secondary Containment. Vehicles/equipment/materials shall only be staged in areas approved by CDFW where the materials will not enter Regulatory Areas. Best Management Practices (e.g., oil drip pans, plastic sheeting) are required for any equipment or vehicles staged overnight. (Timing: Phases 1, 2, and 3).
- APM-ENV-7: Spill Release/Prevention. Vehicles/equipment must be inspected for leaks (e.g., fuel, oil, hydraulic fluids, etc.) and repaired prior to work. Equipment fueling will be contained to the designated staging areas to contain spills, facilitate clean-up, and proper disposal. Spill kits/absorbent clean-up materials shall be available on site and if used, disposed of properly. Spill response procedures will be included in the Project SWPPP. (Timing: Phase 1, 2, and 3).
- APM-ENV-8: Environmentally Sensitive Areas (ESA). Adhere to avoidance and/or monitoring requirements within established ESAs, as prescribed by agency permits and authorizations applicable to the Project. ESAs include Regulatory Areas, critical root zones, and areas containing sensitive plant species. (Timing: Phases 1, 2, and 3).
- APM-ENV-9: Material and Equipment Storage. Project materials and equipment will only be stored on site within staging and storage areas identified in the Project scope. (Timing: Phases 1, 2, and 3).
- APM-ENV-10: Clean Work Areas. Project-generated trash will be contained in vehicles or secured receptacles and removed from the work site daily. (Timing: Phases 2 and 3).
- APM-ENV-11: Weather Limitations. SCE shall monitor the National Weather Service (NWS) 72-hr forecast for the Project area and shall consider precipitation forecasts and potential increases in runoff and stream flow when planning Project activities. Project activities shall not occur if runoff from construction areas or exposed slopes is possible. Project activities shall cease, and the Project site work materials shall be removed or secured to avoid runoff prior to any substantial rain. Substantial rain is when the NWS has predicted a 50 percent or more chance of at least 0.5-inch of rain in 24 hours. SCE shall implement erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter a river, stream, or lake. Weather forecasts shall be documented and available to CDFW and RWQCB upon request (Timing: Phases 1, 2, and 3).
- APM-ENV-12: Post-Storm Event Inspection. After any storm event, the QSP shall inspect all sites scheduled to begin or continue construction within the next 72 hours. Corrective action for erosion and sedimentation shall be taken as needed. NWS 72-hour weather forecasts shall be reviewed prior to the start of any Phase of the Project that may result in sediment runoff to the stream, and plans adjusted to meet this requirement. (Timing: Phases 1, 2 and 3).
- APM-ENV-13: Night Work Restriction. Project activities shall be limited to the period of daylight hours to limit disturbances on wildlife activity. (Timing: Phases 1, 2, and 3).

4.1.2 *Erosion and Sediment Control Measures*

- APM-EC-1: Erosion and Sediment Control. The Proposed Project will implement erosion and sedimentation controls, both during project activities and during the establishment of the native vegetation, to reduce potential hydrological impacts regarding erosion. Temporary stabilization measures are methods and materials that are implemented in the short-term to stabilize soil and sediment flow prior to project actions (e.g., filter fabric, silt fencing, straw wattles). Long-term stabilization measures are installed to promote the stabilization of stream banks and slopes and may include approved soil binders, hydromulch, or rolled erosion control products (e.g., coir

matting). Erosion control measures will be accompanied by sediment controls, typically burlap-wrapped fiber rolls or biodegradable gravel bags. All BMPs will be biodegradable, weed-free, and plastic-free, and made of material that prevents wildlife from becoming trapped. Fiber rolls or erosion control mesh shall be made of loose-weave mesh that is not fused at the intersections of the weave, such as jute, coconut (coir) fiber, or other fibers without welded weaves. Non-welded weaves reduce entanglement risks to wildlife by allowing animals to push through the weave, which expands when spread. These temporary features include the application of stabilizing soil binders to disturbed areas, which will locally stabilize soils to impede point source erosion and sheet flow.

Temporary stabilization measures typically require intermittent maintenance to ensure proper functionality by removing accumulated sediments from behind the stabilization device. A SWPPP will be prepared and implemented to address the short-term stabilization of soils and water flows within the Proposed Project area. (Timing: Phases 1, 2, and 3).

- APM-EC-2: Sediment and Runoff Control. Removed sidecast shall not be placed in areas where it might likely be washed into the stream or inundated by high flows prior to storm events. Removed sidecast shall not be placed where it is likely to have a negative impact on emergent native vegetation or native trees. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion. (Timing: Phase 2).
- APM-EC-3: Contaminated Site Water. Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter a flowing stream, dry ephemeral stream, or storm drains. Such water shall be settled, filtered, or otherwise treated prior to discharge back into the water body. (Timing: Phases 1, 2, and 3).
- APM-EC-4: Inspection of Project Equipment. The qualified biologist shall inspect all vehicles, tools, waders and boots, and other project-related equipment and remove all visible soil/mud, plant materials, and animal remnants prior to entering and exiting the project site. (Timing: Phases 1, 2, and 3).

4.1.3 *Biological Resources Protection Measures*

- APM-BIO-1: Qualified Biologist. A Qualified Biologist, who is approved by CDFW, shall be on site during all vegetation- and ground-disturbing activities to ensure all avoidance and minimization measures are implemented. The Qualified Biologist shall be knowledgeable and experienced in the biology and natural history of local fish and wildlife resources present at the Project site. The Qualified Biologist shall be familiar with the appropriate species survey methodology and USFWS and/or CDFW-accepted species-specific survey protocols, available here: https://wildlife.ca.gov/conservation/survey-protocols. The Qualified Biologist shall be authorized to stop any Project activities, if necessary, to protect fish and wildlife resources. (Timing: Phases 1, 2, and 3).
- APM-BIO-2: Resource Specialists. All Resource Specialists referred to in the HRMP (Appendix A) shall be approved by CDFW prior to the initiation of Project activities. These Resource Specialists shall be authorized to stop any Project activities, if necessary, to protect fish and wildlife resources. (Timing: Phases 1, 2, and 3).
- APM-BIO-3: Daily Pre-Work Clearance Survey. Prior to work occurring for the day, a CDFW-approved Qualified Biologist shall conduct a survey of the work area and an appropriate buffer (based on the habitat and the nature of the proposed work) prior to the commencement of any work or Project-related activities. The purpose of the survey is to identify special status species

and other sensitive biological resources that may be impacted by the proposed work. If a sensitive resource is observed or determined to be likely to occur in the work area based on the results of the survey, the Qualified Biologist will develop resource- and site-specific avoidance measures to avoid adverse effects and shall submit these avoidance measures to CDFW for review and approval. (Timing: Phases 1 and 2).

- APM-BIO-4: Injured/Trapped Wildlife. Prior to the start of work, crews will inspect their workspace for any injured or dead wildlife. In addition, crews will also inspect construction material and equipment for any trapped wildlife. The on-site biological monitor will be contacted if there are observed dead, injured, or trapped wildlife. All work areas will be secured and holes covered to prevent injury or wildlife entrapment. (Timing: Phases 1 and 2).

- APM-BIO-5: Avoid Drainages. All debris (i.e., spoils), vehicles and equipment, and construction materials will be kept from entering drainage features unless the drainage feature is actively being worked on or must be traversed to gain access to an active work area. (Timing: Phases 1, 2, and 3).

- APM-BIO-6: Nesting Bird Monitoring. SCE is responsible for avoiding impacts to nesting birds any time birds are nesting on site. SCE shall ensure that impacts to nesting birds are avoided through the implementation of pre-work surveys, ongoing monitoring, and, if necessary, the establishment of minimization measures such as nesting bird buffers. No Project-related vegetation- or ground-disturbing activity shall be conducted during nesting bird season unless a Qualified Biologist completes nesting bird surveys prior to the start of Project-related activities. Nesting bird season is typically February 1 through September 15 for most bird species and between January 1 through September 15 for raptors. During nesting bird season, pre-work nesting bird surveys shall be conducted by a Qualified Biologist within three days prior to the initiation of Project activities, as well as daily before work activities begin. If the Project site is inactive for one week, nesting bird surveys shall be repeated. Results of pre-work surveys shall be provided to CDFW at least one business day prior to the commencement of Project activities. SCE may also propose an alternative plan for the avoidance of nesting birds for CDFW concurrence based on Project-specific, site-specific, and species-specific information. SCE shall implement the following:(Timing: Phases 1, 2, and 3).
    1. The qualified biologist shall have experience with the following: identifying local and migratory bird species; conducting bird surveys using appropriate survey methodology and USFWS and/or CDFW-accepted species-specific survey protocols (CDFW 2023); nesting surveying techniques, recognizing breeding and nesting behaviors, locating nests and breeding territories, and identifying nesting stages and nest success determining/establishing appropriate avoidance and minimization measures; and monitoring the efficacy of implemented avoidance and minimization measures.
    2. Pre-work surveys shall be conducted by the qualified biologist at the appropriate time of day/night, during appropriate weather conditions. Surveys shall encompass all suitable areas, including trees, shrubs, bare ground, burrows, cavities, and structures. Survey duration shall take into consideration the size of the project area; density, and complexity of the habitat; number of survey participants; survey techniques employed; and shall be sufficient to ensure the data collected is complete and accurate. Pre-work surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior (e.g., copulation, carrying of food or nest materials, nest building, removal of fecal sacks, flushing suddenly from atypically close range, agitation, aggressive interactions, feigning injury or distraction displays, or other behaviors). If a nest is suspected, but not confirmed, the qualified biologist shall establish a disturbance-free buffer until additional surveys can be completed, or until the location can be inferred

based on observations. The qualified biologist shall not risk failure of the nest to determine the exact location or status and will make every effort to limit the nest to potential predation as a result of the survey/monitoring efforts (e.g., limit number of surveyors, limit time spent at/near the nest, scan the site for potential nest predators before approaching, immediately depart nest area if indicators of stress or agitation are displayed). If a nest is observed but thought to be inactive, the qualified biologist shall monitor the nest for one hour (four hours for raptors during the non-breeding season) prior to approaching the nest to determine its status. The qualified biologist shall use their best professional judgement regarding the monitoring period and whether approaching the nest is appropriate.

3. When an active nest is confirmed, the qualified biologist shall implement a default 300--foot minimum avoidance buffer for all common passerine birds and a 500-foot minimum avoidance buffer for all special status passerine and raptor species. CDFW may consider variances from these buffers when there is a compelling biological or ecological reason to do so, such as when the work area would be concealed from a nest site by topography. The breeding habitat/nest site shall be fenced and/or flagged in all directions. The buffer shall be delineated to ensure that its location is known by all persons working within the vicinity but shall not be marked in such a manner that it attracts predators. Once the buffer is established, the qualified biologist shall document baseline behavior, stage of reproduction, and existing site conditions, including vertical and horizontal distances from proposed work areas, visual or acoustic barriers, and existing level of disturbance. The qualified biologist shall monitor the nest at the onset of project activities, and at the onset of any changes in project activities (e.g., increase in number or type of equipment, change in equipment usage, etc.) to determine the efficacy of the buffer. If the qualified biologist determines that project activities may be causing an adverse reaction, the qualified biologist shall adjust the buffer accordingly. The nesting bird area shall not be disturbed until the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, and the young will no longer be impacted by the project.
4. The qualified biologist shall be on-site daily to monitor all existing nests and the efficacy of established buffers and to document any new nesting occurrences. The qualified biologist shall document the status of all existing nests, including the stage of reproduction and the expected fledge date. If a nest is suspected to have been abandoned or failed, the qualified biologist shall monitor the nest for a minimum of one hour (four hours for raptors), uninterrupted, during favorable field conditions. If no activity is observed during that time, the qualified biologist may approach the nest to assess the status. If nesting birds are detected within project site(s) during project implementation and construction, SCE shall notify CDFW immediately in writing.
5. SCE, under the direction of the qualified biologist, may also take steps to discourage nesting on the project site, including moving equipment and materials daily, covering material with tarps or fabric, and securing all open pipes and construction materials. The qualified biologist shall ensure that none of the deterrent materials pose an entanglement risk to birds or other species. The qualified biologist shall include a detailed account of any steps taken to discourage nesting within the project site in the summary reports.
6. Observations of breeding/nesting threatened or endangered bird species during surveys shall be reported immediately to CDFW. The qualified biologist shall be responsible for providing summary reports regarding the nesting species identified on-site, discovery of any new nests, the status/outcome of any previously identified nest, buffer distances established for each nest, and any adjustments made to established buffers. If project

activities result in the abandonment of, or damage to a nest, SCE shall notify CDFW within 24 hours of detection.

- APM-BIO-7: Special Status Herpetofauna Species. Pre-work surveys for special status herpetofauna species such as coast range newt, two-striped gartersnake, coast horned lizard, and coastal whiptail shall be conducted by a Qualified Biologist 14 days and 24 hours before the start of vegetation- or ground-disturbing activities. Separate and species-specific surveys shall be conducted at the appropriate time and with the appropriate methodology to determine if any special status herpetofauna species are present within the Project area. Surveys shall incorporate appropriate methods to detect these species, including individuals that could be concealed in burrows, beneath leaf litter, or in loose soil prior to any Project-related activities in areas that have or may have the potential to support these species. Should any special status herpetofauna be found during pre-work surveys in an identified work area, the Qualified Biologist shall delay all Project ground-disturbing or vegetation-disturbing activities until the species has left the work area voluntarily. SCE shall notify CDFW of the discovery of any special status herpetofauna immediately, and work shall not commence or resume (whichever applies) until CDFW provides written authorization. The results of these surveys shall be provided to CDFW, along with copies of all field notes, prior to the start of Habitat Restoration Installation. (Timing: Phase 2).
- APM-BIO-8: Tree Protection. A tree protection plan will be prepared by a certified arborist and implemented throughout this Project. (Timing: Phases 1 and 2). Specifically, tree protection measures include:
    1. A minimum four-foot-tall, brightly colored synthetic fence shall be installed around the critical root zone (defined by the County of Santa Barbara as the dripline plus 6 feet) to delineate the boundary of the ESA. Fencing shall remain in place until all Construction Activities and Restoration Installation Activities have ceased.
    2. No digging, trenching, compaction, or other soil disturbance shall be allowed in the fenced area.
    3. The storage of construction equipment or hazardous materials such as gasoline, oil, or other toxic chemicals shall not be allowed in or adjacent to the fenced area.
    4. All stockpiled soil will be placed outside of any critical root zone unless specifically authorized by CDFW. Specific authorization will include locations of critical root zone encroachment, the volume of material, and timing for stockpile storage.
    5. Grade changes shall be avoided near fenced areas.
    6. Designated roads and parking areas shall be established. All construction personnel shall be restricted to driving and parking in designated areas. Prolonged discharge (idling) of exhaust from construction vehicles and equipment shall not be allowed near the critical root zone.
    7. All work shall be performed under the direction of a certified arborist.
    8. A monitoring biologist will regularly inspect fencing and will implement and document any encroachments to native tree critical root zone and corresponding corrective measures for incorporation in the post-construction compliance report. Work around trees will be overseen by a qualified arborist to ensure trees are adequately protected and no additional impacts occur.
- APM-BIO-9: Restoration of Disturbance to Native Vegetation or Sensitive Plants. Following project activities, any disturbance to native vegetation communities or sensitive plants as a result

of project activities will be mapped and restored in accordance with the Creek HRMP. (Timing: Phases 2 and 3).

- APM-BIO-10: ESA Flagging and Monitoring. Prior to materials/equipment mobilization and Habitat Restoration Installation, the hydrologic monitor will flag regulated areas that will need to be avoided or monitored as part of the installation. Throughout work activities, the hydrologic monitor will ensure the protection of the adjacent Regulatory resources. (Timing: Phases 1 and 2).
- APM-BIO-11: Collection of Rare Plant Propagules. During the appropriate season; seed, bulbs, or cuttings of sensitive plant species within the footprint of construction having potential to be impacted or cannot be avoided; may be collected for restoration purposes in accordance with the Creek HRMP. In this instance, SCE will notify CDFW before impacting rare plants to allow adequate time to salvage the plants. Species targeted for cutting collection include Plummer's baccharis, while seed of Plummer's baccharis, Santa Barbara honeysuckle, and Hubby's phacelia also may be collected. Collection practices will follow industry standards for extraction, potting, storage, and care prior to transplanting. (Timing: Phases 1, 2, and 3).
- APM-BIO-12: Change in Seed Lists or Plant Lists. Changes to seed or plant lists will be submitted to SCE, SCE's Restoration ecologist, for review and approval prior to application. (Timing: Phases 1, 2, and 3).
- APM-BIO-13: Species-Specific Rehabilitation. Three sensitive plant species—Santa Barbara honeysuckle, Plummer's baccharis, and Hubby's phacelia—are known to occur within the project area and will be incorporated into the revegetation program as part of project work. (Timing: Phases 2-3).
- APM-BIO-14: Adaptive Management Herbicide Use. Any use of herbicide will be prescriptive and targeted to control particularly noxious weeds such as carnation spurge (*Euphorbia terracina*), fountain grass (*Pennisetum setaceum*), and French broom (*Genista monspessulana*). Targeted herbicide application to mustard (*Brassica* spp., or *Hirschfeldia* spp.) in sidecast areas away from public access may also be considered as an adaptive management tool. Herbicide application will not be applied during windy conditions with gusts above 5 miles per hour or within 24 hours of a rain event. All application would be completed in compliance with U.S. Environmental Protection Agency (EPA), state and local regulations, by licensed applicators. The County and City will be consulted before herbicide use and pesticide use reports will be submitted to CDFW and the California Department of Pesticide Regulation database. (Timing: Phase 3).

4.1.4 *Invasive Weed Species*

- APM-INV-1: Clean Vehicles and Equipment. All vehicles and any ground- or vegetation-disturbing equipment/tools must be cleaned and free of mud, soil, and plant material before entering the project site. Cleaning can be through car washes, compressed air, pressure washers, brushes, or similar equipment. All vehicles will be inspected before coming on-site and a record of wash/inspection time, date, location of where the equipment was cleaned and the distance to work site maintained. (Timing: Phases 1, 2, and 3).
- APM-INV-2: Weed Free Materials. All BMP materials will be weed-free, plastic-free, and fully biodegradable materials. All specifications of the project SWPPP will be implemented on-site. (Timing: Phases 1, 2, and 3).

4.1.5 *Air Quality and Fugitive Dust Control*

- APM-AQ-1: Air Quality and Fugitive Dust Control. During Habitat Restoration Installation, standard BMPs would be implemented to minimize dust consistent with the dust control requirements of the County's Grading Ordinance (Section 14-23) and Santa Barbara County Air Pollution Control District (SBCAPCD) Rule 345. These measures require maintenance of mobile and other construction equipment, watering exposed surfaces to prevent dust from leaving the site, creating a crust after each day's activities cease, covering stockpiles when required (e.g., non-active, prior to onset of precipitation, etc.), watering all haul roads daily, and limiting speeds on unpaved roads to 15 miles per hour. All temporary areas of ground disturbance would be treated (e.g., with water or dust suppressant) to prevent visible emissions of dust. (Timing: Phase 2).

5 IMPACTS ANALYSIS AND RECOMMENDATIONS

In total, the December 2019 work impacted 3.51 acres of native vegetation. Implementation of the HRMP will temporarily impact a total of 4.64 acres. Temporary impacts include 2.48 acres of sidecast removal, 0.12 acres of non-sidecast restoration, 1.27 acres of habitat enhancement, 0.5 acres of berm stabilization/reconstruction, and 0.27 acres of contingency areas. This section evaluates the direct effects and indirect effects to biological resources and provides recommendations to reduce impacts to all biological resources to less-than-significant.

Direct or primary effects—as defined in the 2022 CEQA Statutes and Guidelines—are caused by the project and occur at the same time and place (Association of Environmental Professionals [AEP] 2022). For federally listed species and species proposed for listing, direct effects are those that would lead to the take of an individual listed species as defined in Section 9 and/or Section 10 of the Endangered Species Act of 1973, as amended (the Act). Section 9 of the Act prohibits the taking (i.e., harm, harass, pursue, hunt, wound, kill, etc.) of listed species without special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or shelter. "Harass" is further defined as actions that create the likelihood of injury to listed species to an extent as to significantly disrupt normal behavioral patterns, which include breeding, feeding, and shelter.

There is a potential for direct effects on several special-status species throughout the proposed project area because of their confirmed presence or high potential for these species to occur. However, these effects would be reduced to less than significant through the implementation of the avoidance measures detailed in Section 4 and the MMs in Section 5.8.

Indirect or secondary effects—as defined in the 2022 CEQA Statutes and Guidelines—are caused by the project and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate and related effects on air and water and other natural systems, including ecosystems (AEP 2022).

The County of Santa Barbara Environmental Thresholds and Guidelines Manual provides general quantitative guidelines for biological resources in addition to the CEQA Appendix G thresholds. Per the County of Santa Barbara Environmental Thresholds Guidelines (2021), requirements for the protection of biological resources in the unincorporated area of Santa Barbara County are provided by the Comprehensive Plan Conservation Element, Environmental Resource Management Element (ERME), Land Use Element, Community Plans, and the Coastal Land Use Plan. These documents identify sensitive

habitats and species and provide measures to direct project design and policies to protect biological resources (County of Santa Barbara 2021).

5.1 Significance Thresholds

The following are the significance thresholds for biological resources provided in the CEQA Appendix G Environmental Checklist (California Natural Resources Agency 2016), which states that project activities could potentially have a significant effect if they:

1. Impact BIO-1: 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 CDFW or USFWS.
2. Impact BIO-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS.
3. Impact-BIO-3: Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Impact BIO-4: 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.
5. Impact BIO-5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

5.2 Impact-Bio-1: Special-Status Species

5.2.1 *Special-Status Plants*

5.2.1.1 DIRECT IMPACTS

Section 1913(b) of the California Fish and Game Code (FGC) provides exemptions to native plant protections for publicly or privately owned public utilities in operation to provide services to the public; however, pursuant to Section 1913(c), the landowner shall notify CDFW before impacting rare plants to allow CDFW to salvage the plants. Furthermore, the FGC 1913(b) public utility exemption for impacts to rare plants and incidental take permitting was restated in 14 California Code of Regulations (CCR) 786.9(d) (Take of Rare Plants).

Each section below outlines the direct effects on each special-status plant known or suspected to be present in the project area (see Figures A-4d and A-4e). Direct impacts to rare plants are expected during implementation of the restoration work and subsequent project maintenance. Anticipated direct impacts may include intentional or accidental removal, burial under soil/organic matter, seed bank disruption, breakage, crushing or breakage from parking outside designated areas, and/or root disturbance as a result of trampling and removal of sidecast. These impacts will be reduced to less-than-significant through the implementation of APMs ENV-1 through ENV-4; APM-ENV-8; APMs BIO-1 through BIO-3; APMs BIO-9 through BIO-13; and MM-BIO-1.

- White snapdragon: Direct impacts to white snapdragon may occur as a result of project activities; an unknown number of individuals are present at the project site. Impacts to this species will be avoided and minimized through implementation of ENV-4; APM-ENV-8; and MM-BIO-1. This species is not state or federally listed, but rather a local species of importance per the *Draft Rare Plants of Santa Barbara County* (Wilken 2018). Thus, habitat restoration, translocation, planting, seeding, or compensatory mitigation is not proposed to mitigate for impacts to this species.
- Plummer's baccharis: Direct impacts to individual Plummer's baccharis may occur as a result of the project activities in Creek Sites 2–4, and in Trail Road Area 2. Forty-nine occurrences were recorded, including three large patches (see Figures A-4b through A-4e and A-4g through A-4j). Of these, six are within the project area and may be impacted (see Figures A-4c and A-4e).
- Late-flowered mariposa lily: No impacts are anticipated to occur to late-flowered mariposa lily as a result of the project activities. Thirty-three occurrences, none of which are within project impact areas, were recorded (see Figure A-4h through A-4j).
- Ocellated Humboldt lily: No impacts are anticipated to occur to ocellated Humboldt lily as a result of the project activities. One occurrence was recorded, which is outside the project footprint (see Figure A-4c).
- Santa Barbara honeysuckle: Direct impacts to individual Santa Barbara honeysuckle may occur as a result of the project activities in Creek Sites 3 and 4. Approximately 115 occurrences were observed across all surveys (see Figures A-4b through A4-f), 18 of which are within the project area and may be impacted (shown on Figures A-4c and A-4e).
- Sonoran maiden fern: No impacts are anticipated to occur to Sonoran maiden fern as a result of the project activities. Three occurrences, all of which are all outside the project footprint, were documented (see Figures A-4a and A-4c).
- Hubby's phacelia: Direct impacts to individual Hubby's phacelia may occur as a result of the project activities. Ten occurrences were recorded during surveys (see Figures A-4b, A-4b, and A-4f through A-4h), two of which are within the project area and may be impacted (see Figures A-4b and A-4c).
- Coastal sage scrub oak: Approximately 20 individuals were documented, mainly near the parking area at the trailhead (see Figure A-4a), and two individuals further east along Spyglass Ridge Road (see Figures A-4b and A-4g). The individuals near the trailhead are adjacent to parking and staging areas, and may be impacted inadvertently by vehicles, trampling, or fugitive dust.
- Sandpaper vervain: Direct impacts to sandpaper vervain may occur as a result of project activities. A vervain was identified to genus (*Verbena*) during rare plant surveys. However, it is unknown whether or not sandpaper vervain is present at the project site. Impacts to this species will be avoided and minimized through implementation of ENV-4; APM-ENV-8; and MM-BIO-1. This species is not state or federally listed, but rather a local species of importance per the *Draft Rare Plants of Santa Barbara County* (Wilken 2018). Thus, habitat restoration, translocation, planting, seeding, or compensatory mitigation is not proposed to mitigate for impacts to this species.

5.2.1.2 INDIRECT IMPACTS

Potential temporary indirect impacts to sensitive plants in the project area could occur through excessive fugitive dust, which can settle on plants restricting light penetration and photosynthesis. APM-AQ-1: Air Quality and Fugitive Dust incorporated into the project includes implementation of fugitive dust control

measures in accordance with Santa Barbara County Grading Ordinance requirements which will reduce the level of dust generation through access road watering and covering inactive stockpiles.

Indirect impacts to Sonoran maiden fern could result from work upstream from the documented new occurrence. Mitigation Measure (MM)-1: Biological Monitoring Plan includes monitoring this species despite its location outside of the project area and will reduce any temporary impacts to less-than-significant.

Indirect impacts to the special-status plant species observed within the project area will be reduced to less-than-significant through implementation of APMs ENV-1 through ENV-10; APMs EC-3 and EC-4; APMs INV-1 and INV-2; and MM-BIO-1.

5.2.2 *Special-Status Wildlife*

5.2.2.1 DIRECT IMPACTS

Each section below outlines the direct effects on each special-status wildlife species known or suspected to be present in the project area. The following impacts analysis to special-status wildlife species are assessed here.

Direct impacts to the special-status wildlife species could result from trampling or crushing during in-stream work, burial under soil/organic matter, and habitat disruption. Impacts will be reduced to less-than-significant through implementation of APMs ENV-1 through ENV-5; APMs ENV-8 through ENV-13; MMs FGC-1 through FGC-5; APMs EC-1 through EC-4; APMs BIO-1 through BIO-5; APMs BIO-7 and BIO-10; and MM-BIO-1 and MM-BIO-2 described in Sections 4.1 and 5.8 respectively.

- Coast Range newt: Coast Range newt is a semi-aquatic amphibian endemic to California, typically found along the coast from Mendocino County to San Diego County. Adults emerge during the wet weather and become aquatic during the breeding season, often remaining near breeding habitat several weeks. Coast Range newt has been confirmed as present within Mission Creek. At least 15 individuals, including one gravid female, seven egg masses, and an active copulation, were encountered on April 21, 2020, during a steelhead trout survey downstream of Mission Creek Bridge. Because of the location and size of the Coast Range newt populations observed near the project area, direct impacts from to the species through trample or soil disturbance may occur during restoration implementation activities.

  Additional impacts may occur from the introduction or spread of the chytrid fungus (*Batrachochytrium dendrobatidis*). Coast range newt and other amphibian species that occur in Mission Creek may be susceptible to infection. Chytrid is spread through direct contact between hosts and potentially through water containing free-swimming zoospores (University of California, Riverside 2023). Coast range newt observed during the steelhead surveys appeared to be in good health and show no signs of infection. Legacy data from AmphibiaWeb's Disease Portal positive detections upstream in 1981 (AmphibiaWeb 2020). No other information on these positive detections is available. There is currently no recent data on the presence of chytrid in Mission Creek. Workers could potentially transport chytrid to or from Mission Creek if present. Protective measures are incorporated into the project and include activity monitoring by a qualified wildlife biological monitor and best management practices when work is conducted in stream habitat. Implementation of these protective measures would further reduce the potential for direct impacts to Coast Range newt, which would be less than significant.

- Coastal whiptail and coast (Blainville's) horned lizard: Widening of the roads and creation of open spaces during the September to November 2020 road restoration work increased foraging

habitat for both species, and slightly reduced protective coverage where vegetation was impacted along the road areas. Vehicle travel and/or trampling during stream restoration activities may have a low possibility of direct loss of horned lizard if they are not able to move away in time because of their cryptic defensive behavior.

5.2.2.2 INDIRECT IMPACTS

SWPT, two-striped gartersnake, Coast Range newt, and other non-sensitive amphibians may be temporarily impeded because of movement of sediment and debris associated with project activities. Indirect impacts to the special-status wildlife species observed within the project area will be reduced to less-than-significant through implementation of APMs ENV-1 through ENV-10; APM-ENV-13; APMs EC-3 and EC-4; APM-INV-1; and MM-BIO-1 and MM-BIO-2 described in Sections 4.1 and 5.8 respectively.

- Steelhead: Although habitat for steelhead exists downstream of the project area in Mission Creek, the segment of the Creek within the project area is not occupied by anadromous steelhead and will remain unoccupied by the species without human assistance that would likely result in significant impacts to cultural resources (e.g., removal or bypassing the Old Mission Dam) and other human-made features. Therefore, implementation of the project will not result in direct take of this species or impacts to occupied steelhead habitat. The project is intended to restore this segment of Mission Creek by removing sediment and rock deposited there during the December 2019 work. The potential for indirect impacts (such as sedimentation) to downstream water quality during restoration implementation activities will be avoided through implementation of the SWPPP included as a component of the project.
- Southwestern pond turtle: SWPT is known to occur in suitable habitat throughout Santa Barbara County. Suitable open nesting habitat is not present in the project area and SWPT has not been observed in the project area incidentally or during previous project surveys. However, suitable aquatic habitat for dispersal and overwintering is present within the drainages, primarily downstream. As a result, this species is considered likely to occur in the project vicinity, particularly downstream of Mission Creek Bridge and within other tributaries in the watershed where ponding is relatively permanent. Thus, implementation of the project may result in indirect, temporary impacts to SWPT through temporary changes in water quality during project implementation. Protection measures are incorporated into the project and include working during dry conditions and in areas where ponding is mostly temporary, monitoring by a qualified wildlife biological monitor when work is conducted in stream habitat, avoidance of work or discharge of materials in streams, and review of the work site for trapped or injured individuals. Implementation of these protection measures would further reduce the potential for indirect impacts to SWPT, which would be less than significant.
- Two-striped gartersnake: Two-striped gartersnake may be indirectly impacted by the removal of sidecast material adjacent to suitable habitat in the project area. Implementation of protection measures would reduce the potential for indirect impacts to two-striped gartersnake to less than significant.
- Ring-tailed cat: The riparian and other woodland habitat within the project area is suitable for the species to move through the area, and portions of Mission Creek are isolated from disturbance and may provide appropriate refuge, but they are assumed unlikely to occur or be encountered within the project area based on their elusive behavior, relatively small and scattered permanent water sources in the vicinity, and historic population data. The species is also strictly nocturnal and not encountered during the daytime hours. No significant impacts to ring-tailed cat are anticipated given the wide range and low density of the general species population, unlikelihood of its frequent occurrence, and work activities being conducted in daylight only.

5.3 Impact-Bio-2: Riparian and Special-status Vegetation Communities

A total of eight different native vegetation communities were mapped within the project area. Of these, four vegetation communities are considered sensitive by CDFW (CDFW 2020b) (see Table 6). The components of the project that may result in temporary impacts to sensitive natural communities include planting and seeding, staging and storage areas, parking areas, in-stream habitat features and contingency buffers. A total of 4.64 acres of temporary impacts to sensitive natural communities and disturbed areas (e.g., disturbed berms) will occur as a result of project implementation.

5.3.1 *Direct Impacts*

Temporary direct impacts to special-status vegetation communities may occur as a result of work activities would not likely result in significant impacts.

Potential temporary direct impacts to special status vegetation communities in the project area could result primarily from mechanized sidecast removal and/or from staging and storage areas that overlap with special status vegetation communities. The APMs and Mitigation Measures incorporated into the project will minimize impacts to these communities during construction. Additionally, the project will minimize these direct, temporary impacts through biological monitoring and subsequent planting.

5.3.2 *Indirect Impacts*

Temporary and long-term indirect impacts to special-status vegetation communities as a result of work activities would not likely result in significant impacts.

Potential temporary indirect impacts to sensitive native vegetation communities in the project area could result primarily from the potential generation of fugitive dust and the introduction of invasive plant species by construction equipment. Excessive dust can decrease the vigor and productivity of vegetation through effects on light, penetration, photosynthesis, and increased incidence of pests and diseases. Indirect impacts could also result from the unintentional introduction of chemical pollutants into the environment through vehicle use and/or use of machinery. The APMs incorporated into the project include implementation of fugitive dust control measures in accordance with Santa Barbara County Grading Ordinance requirements, which will reduce the level of dust generation through, e.g., watering access roads and exposed surfaces and covering inactive stockpiles. Additionally, construction equipment can spread invasive plant species to areas of native vegetation when the seed or chaff is carried on tires or other equipment and used within or adjacent to native vegetation communities. All vehicles and any ground or vegetation disturbing equipment/tools must be cleaned and free of mud, soil, and plant material before entering the project area. Cleaning can be achieved by using car washes, compressed air, pressure washers, brushes, or similar equipment. The Creek HRMP includes five years of monitoring and maintenance of the project area, which would include invasive species removal and control. Thus, the potential for adverse project impacts to special-status vegetation communities would be less than significant.

5.4 Impact-Bio-3: Jurisdictional Waters

Impacts to jurisdictional waters are discussed in the *Mission Creek/Tunnel Trail Road Grading Project, Jurisdictional Delineation, Santa Barbara California* (Michael Baker International 2022).

5.5 Impact-Bio-4: Migratory Birds and Wildlife Corridor/Nursery Sites

5.5.1 *Nesting Birds*

5.5.1.1 DIRECT IMPACTS

High-quality habitat for nesting birds exists throughout the project area and nesting may occur in suitable locations throughout the project area. If work occurs during the nesting season (February through August, January through June for raptors), birds may actively be nesting or engaging in nest-related behavior (e.g., courtship and nest-building) in the project area during restoration activities. If present, active nests may be unintentionally damaged or destroyed by heavy equipment, vehicles, or crews on foot. Active nests may be abandoned if parents determine that the nest is at risk, and live birds or eggs may be injured or destroyed. Whenever possible, the generation of mechanical noise will be avoided during the nesting season. Implementation of APMs APM-BIO-4 (Injured/Trapped Wildlife), and APM-BIO-6 (Nesting Bird Monitoring), and mitigation measure MM-BIO-01 (Biological Monitoring Plan) would reduce potential direct impacts to nesting native bird species to less-than-significant by restricting construction to the period outside of the nesting season or establishing a construction buffer to avoid disturbance to any nesting individuals and checking work areas and equipment for any birds or active nests. Buffer size will be determined based on the presence of natural buffers, nest location, presence of foraging habitat, and baseline levels of noise and human activity.

5.5.1.2 INDIRECT IMPACTS

Indirect impacts to nesting birds will be avoided through implementation of APM-BIO-6 (Nesting Bird Monitoring) which requires pre-construction nesting surveys and on-going monitoring. Implementation of this measure will reduce the potential for indirect impacts to protected nesting birds.

5.5.2 *Wildlife Corridors and Nursery Sites*

At the regional level, the project area lies in the southern portion of the Santa Ynez Mountains. Large mammal species such as coyote, bobcat, mountain lion, and mule deer may use the project area when traveling to the open space to the north, east, and west of the project area. The project is limited to restoration activities within a 7.24-acre site. Project activities along the roads and upper slopes are not likely to have impacts on the movement of terrestrial wildlife species.

Streams such as Mission Creek and its tributaries may also be considered wildlife corridors for aquatic species, such as fish. However, the April 2020 steelhead survey found several human-made physical barriers along Mission Creek that prevent movement fish and other aquatic wildlife upstream. No impacts to steelhead are anticipated; therefore, no mitigation measures for steelhead are needed.

SCE will collect stream habitat feature and fluvial geomorphological data from unimpacted stretches of Mission Creek to assess the range of natural stream sinuosity that exists within this stretch of the creek (HELIX 2023). These data will supplement biological and jurisdictional surveys conducted within the December 2019 work area (HELIX 2023) and inform restoration of stream hydrology, connectivity and adjacent habitat to conditions before impacts. The project will also prevent downstream impacts to resident fish by removing the sidecast material, and restabilizing slopes and banks.

Localized activity of other aquatic species, such as non-sensitive native fishes, SWPT, two-striped gartersnake, Coast Range newt, and other non-sensitive amphibians and reptiles may be temporarily

impeded because of movement of sediment and debris associated with instream restoration activities. Implementation of APMs ENV-4 (Worker Environmental Awareness Program (WEAP) and ENV-8 (Environmentally Sensitive Areas), MM-FGC-3 (Hydrologic Monitor), APM-BIO-4 (Injured/Trapped Wildlife), and APM-BIO-5 (Avoid Drainages), and mitigation measure MM-BIO-1 (Biological Monitoring Plan) would ensure that potential impacts to special-status aquatic reptiles and amphibians would be less than significant.

5.6 Impact-Bio-5: Other Local Ordinances

The Santa Barbara County Comprehensive Plan Conservation Element (County of Santa Barbara 2010) includes an oak tree protection supplement that addresses protections for several species of oak trees, including coast live oaks. These protections would apply to native oak trees in the project area; however, the removal of trees is not proposed by the project. Inadvertent impacts to tree roots are possible. The project is proposed to restore and rehabilitate native vegetation and trees within the project footprint. APM-ENV-2 (Approved Work Areas), APM-ENV-3 (Delineation of Approved Work Areas), APM-ENV-4 (Worker Environmental Awareness Program (WEAP), APM-ENV-8 (Environmentally Sensitive Areas), and APM-BIO-8 (Tree Protection Plan) would ensure that trees are adequately protected during project activities.

5.7 Impact-Bio-6: Habitat Conservation Plans

The project does not overlap any existing habitat conservation plans. Therefore, the project would not conflict with a habitat conservation plan. No mitigation measures are needed.

5.8 Mitigation Measures

The following MMs will be implemented during and after construction and will mitigate any otherwise unavoidable impacts to sensitive resources. Implementation of the MMs will reduce impacts to all biological resources to less than significant.

5.8.1 *Biological Resources*

- MM-BIO-1: Biological Monitoring Plan. Prior to Project implementation, a Biological Monitoring Plan will be developed that: 1) outlines the roles and responsibilities of the Qualified Biologists; 2) identifies communication protocols should the Qualified Biologists need to stop work; 3) outlines how the Qualified Biologists will communicate and coordinate with crews daily; 4) outlines a Worker Environmental Awareness Program (WEAP) that identifies specific work activities likely to impact to resources (e.g., soil vacuuming) that will be administered by the Qualified Biologists prior to initiation of work and material/equipment mobilization; and 5) describes safety protocols that the Qualified Biologists will adhere to while working in the Project area. The Biological Monitoring Plan must be approved by CDFW prior to Project initiation and hardcopies will be kept with a Qualified Biologist and an on-site construction foreman during Project activities. (Timing: Phases 1, 2, and 3).
- MM-BIO-2: Best Management Practices for Working in Aquatic Habitats. In order to prevent the spread of chytrid fungus, all personnel working in aquatic habitats will follow the guidelines and decontaminated methods listed in CDFW's *Aquatic Invasive species Decontamination Protocol* (CDFW 2022) while working in flowing water. The following best management practices will be implemented.

1. When working in areas subject to the Regulatory Authority of CDFW, begin upstream and work downstream to avoid transporting invasive species to upstream areas.

2. Only work in one waterbody per day and decontaminate equipment at the end of the day (all aquatic resources within the Project site are considered a single waterbody for the purposes of this measure).
3. If working in multiple waterbodies, use separate equipment for each site and decontaminate it at the end of the day. Bag used equipment and keep separate from unused equipment to prevent cross-contamination.
4. If working in multiple waterbodies in a single day and cannot use separate equipment, decontaminate it at the site prior to traveling to the next site.
5. Wear rubber soled footwear for ease of decontamination.
6. Clean all equipment before decontaminating. Debris reduces the efficacy of all decontamination methods by sheltering organisms from exposure and/or neutralizing chemicals.

5.8.2 *Measures Applicable to Areas Subject to Fish and Game Code (FGC) 1602*

- MM-FGC-1: Stream Monitoring. A Qualified Biologist shall conduct monitoring of Mission Creek upstream and downstream of the Project site when water is present in the Project area during Project activities. The Qualified Biologist shall monitor instream flow conditions (i.e., no flows, insufficient flow to sustain aquatic life, isolation of pools) and water quality (i.e., water temperature, pH, dissolved oxygen, and turbidity levels). These selected locations shall be monitored on a daily basis during Habitat Restoration Installation in the stream and tributaries when water is present. The Qualified Biologist shall immediately report any signs of aquatic wildlife distress to CDFW. The results of the daily stream monitoring shall be submitted to CDFW and RWQCB for review weekly. (Timing: Phase 2).

- MM-FGC-2: Turbidity. If work occurs within the stream or tributaries when water is present, turbidity levels in the stream resulting from Project-related activities shall not exceed 10 percent of natural turbidity levels, as measured 200 feet upstream from the Project site. Conditions shall be monitored and measured daily and submitted to CDFW and RWQCB for review. Upon CDFW and/or RWQCB determination that turbidity/siltation levels, resulting from Project-related activities, constitute a threat to aquatic life or additional impacts downstream of the Project site, activities associated with the turbidity/siltation shall be halted until effective CDFW-approved and RWQCB-approved control devices are installed, or CDFW-approved and RWQCB-approved abatement procedures are initiated. (Timing: Phase 2).

- MM-FGC-3: Hydrologic Monitor. A qualified hydrologic monitor (hydrologic monitor from the fluvial morphology team identified in Section 3.5.3), approved by CDFW and RWQCB, will monitor work activity within streams. The hydrologic monitor will have the capacity to help identify sidecast material versus native material and will work with the contractor to determine materials that may remain in place and not impact the overall hydrology of the system. (Timing: Phase 2).

- MM-FGC-4: Southwestern Pond Turtle Pre-Construction Surveys. Prior to Habitat Restoration Installation, surveys for southwestern pond turtle (SWPT) shall be conducted by a Qualified Biologist 14 days before and 24 hours before the start of vegetation clearing and ground-

disturbing activities where suitable habitat exists (e.g., along riparian areas, freshwater emergent wetlands and adjacent upland areas) as well as an appropriate distance upstream and downstream of these areas, to determine presence or absence of SWPT following the 2006 USGS Western Pond Turtle (*Emys marmorata*) Visual Survey Protocol for the Southcoast Region. No trapping will be performed. Documentation of these surveys and findings shall be submitted to CDFW for review prior to the commencement of Habitat Restoration Installation and within 30 days following the completion of the surveys. If there is a pause of more than five days in Project activities, SWPT surveys shall be repeated, and the findings shall be submitted to CDFW for review prior to recommencement of work. (Timing: Phases 1 and 2).

1. If SWPT or their nests are observed during surveys, a Qualified Biologist shall be on site to monitor Project-related activities in suitable SWPT habitat. SWPT found within the Project area will be allowed to leave of its own volition, or it will be captured by a Qualified Biologist and relocated out of harm's way to the nearest suitable habitat immediately upstream or downstream from the Project site. Should SWPT become federally listed, SCE and/or USACE will contact USFWS to ensure impacts to SWPT are fully avoidable or whether permitting is required. If SWPT becomes listed, handling/relocation will not be conducted without authorization from USFWS.

2. If SWPT nests are identified in the work area during surveys, a 450-foot, no disturbance buffer shall be established between the nest and any areas of potential disturbance. Buffers shall be clearly marked with temporary fencing. Construction Activities and Restoration Installation Activities will not be allowed to commence in the exclusion area until hatchlings have emerged from the nest, or the nest is deemed inactive by a Qualified Biologist.

- MM-FGC-5: Aquatic Species Protection. SCE shall monitor the National Weather Service (NWS) 72-hr forecast for the Project area and shall consider precipitation forecasts and potential increases in stream flow when planning Project activities within or adjacent to streams. No Project-related activities, including access, shall be conducted within or adjacent to streams with flowing or ponded water except for QSP or water quality inspections. Project activities shall cease, and all work materials shall be removed from within or adjacent to streams prior to any substantial rain. Substantial rain is when the National Weather Service has predicted a 50% or more chance of at least 0.3-inch of rain in 24 hours. Weather forecasts shall be documented and available to CDFW upon request. (Timing: Phases 1, 2, and 3).

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APPENDIX A

Figures

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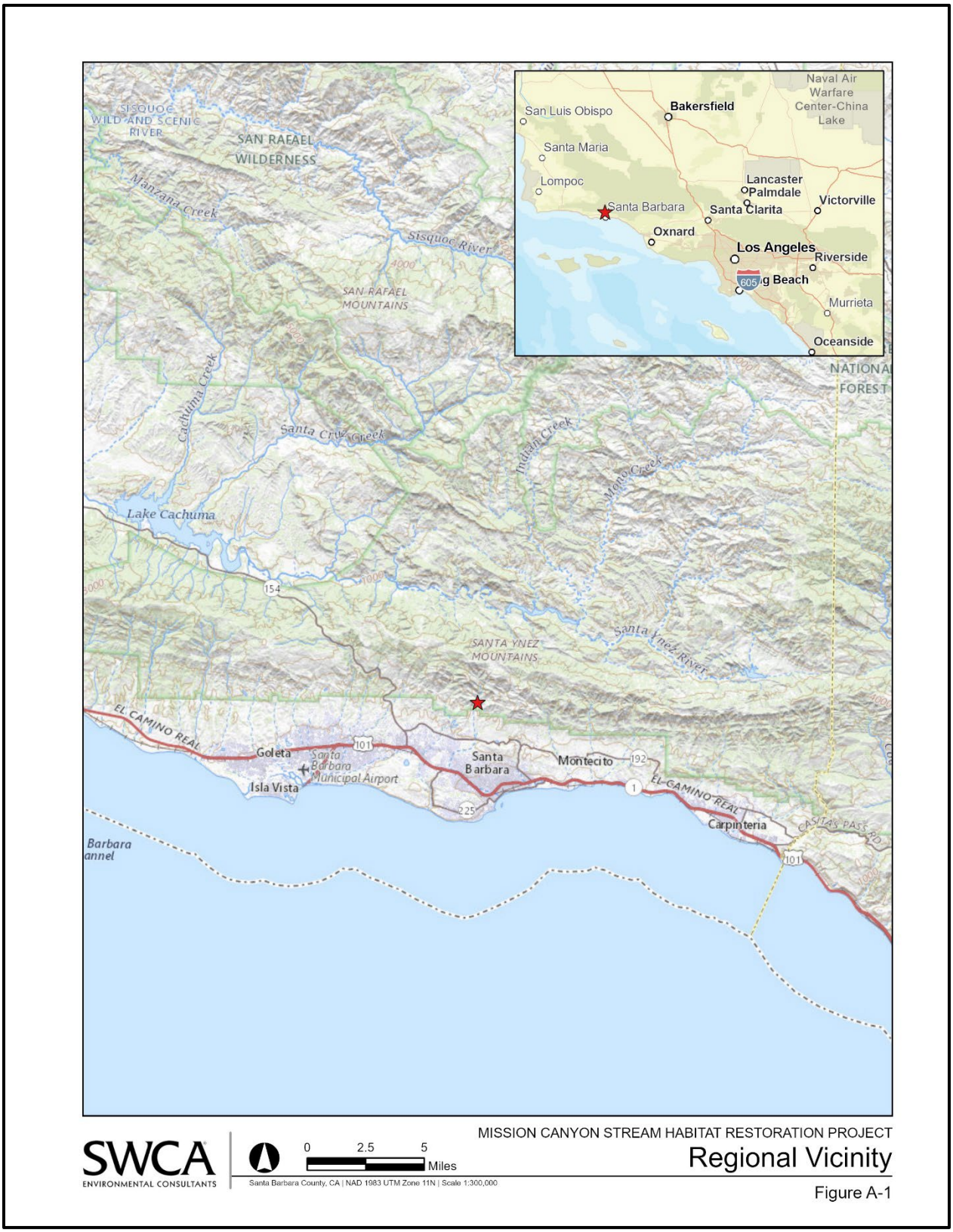

Figure A-1. General vicinity of the project area.

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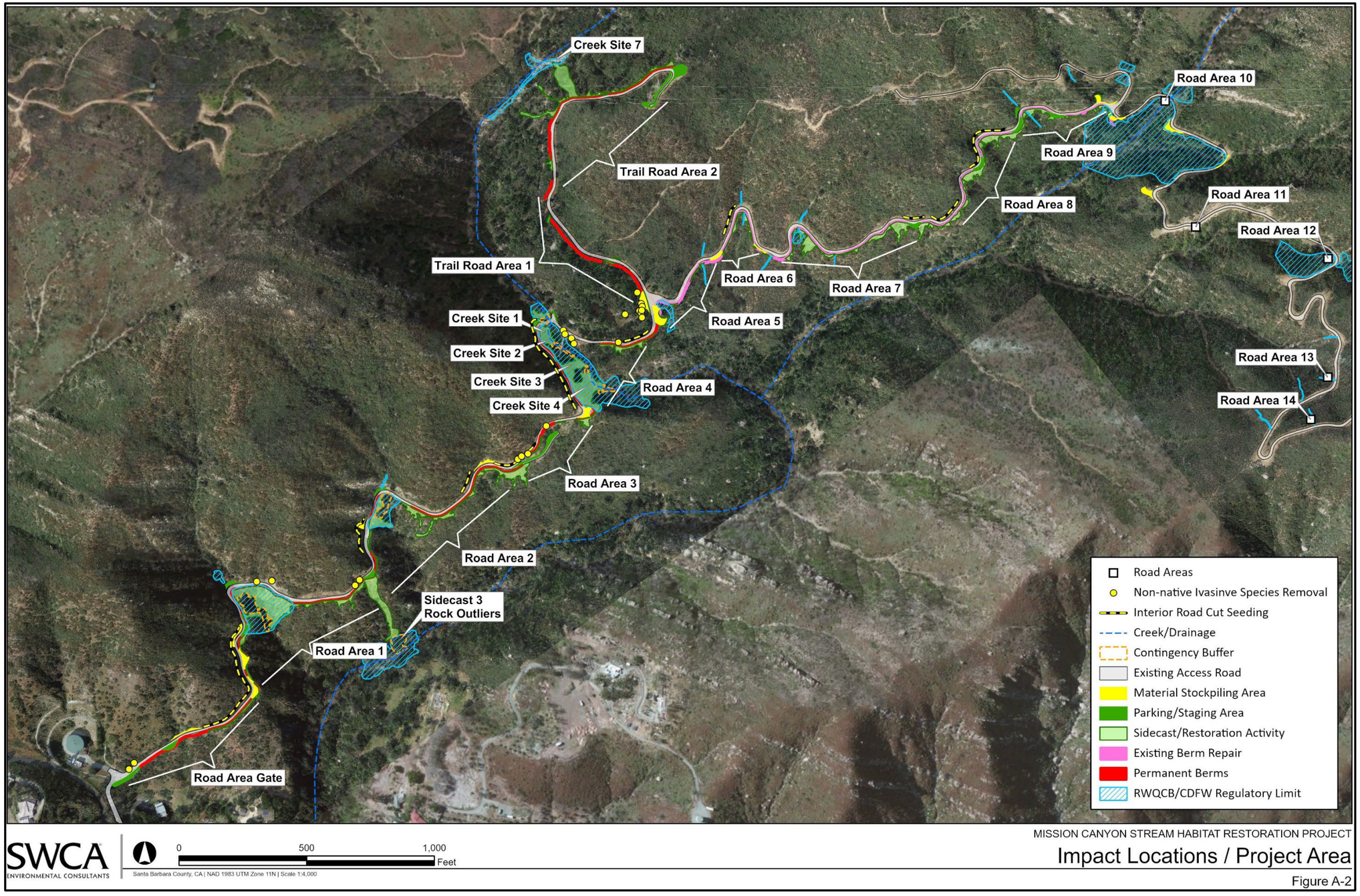

Figure A-2. Project area with impact locations.

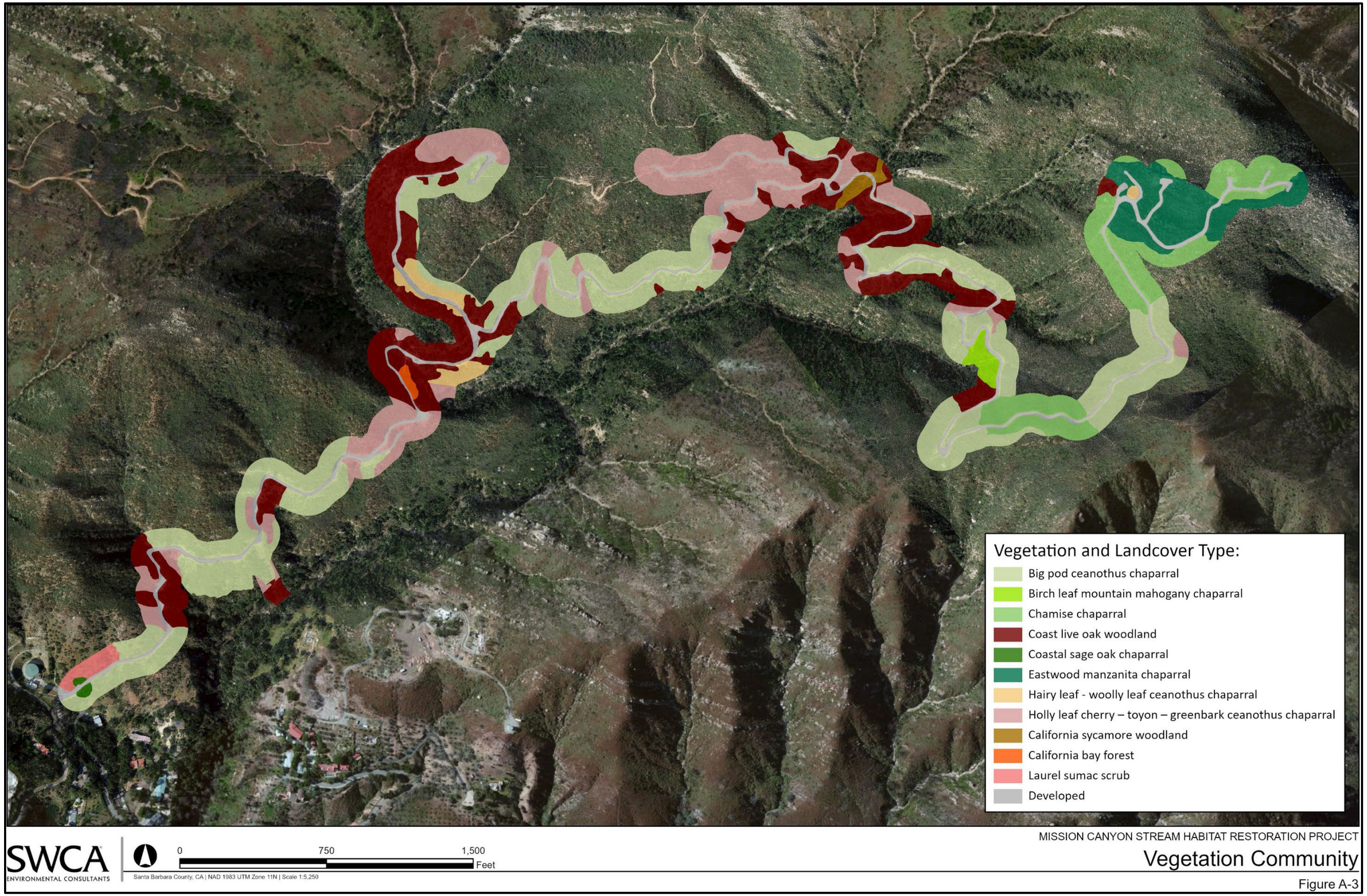

Figure A-3. Vegetation communities.

Figure A-4a. Botanical resource impacts (image 1 of 10).

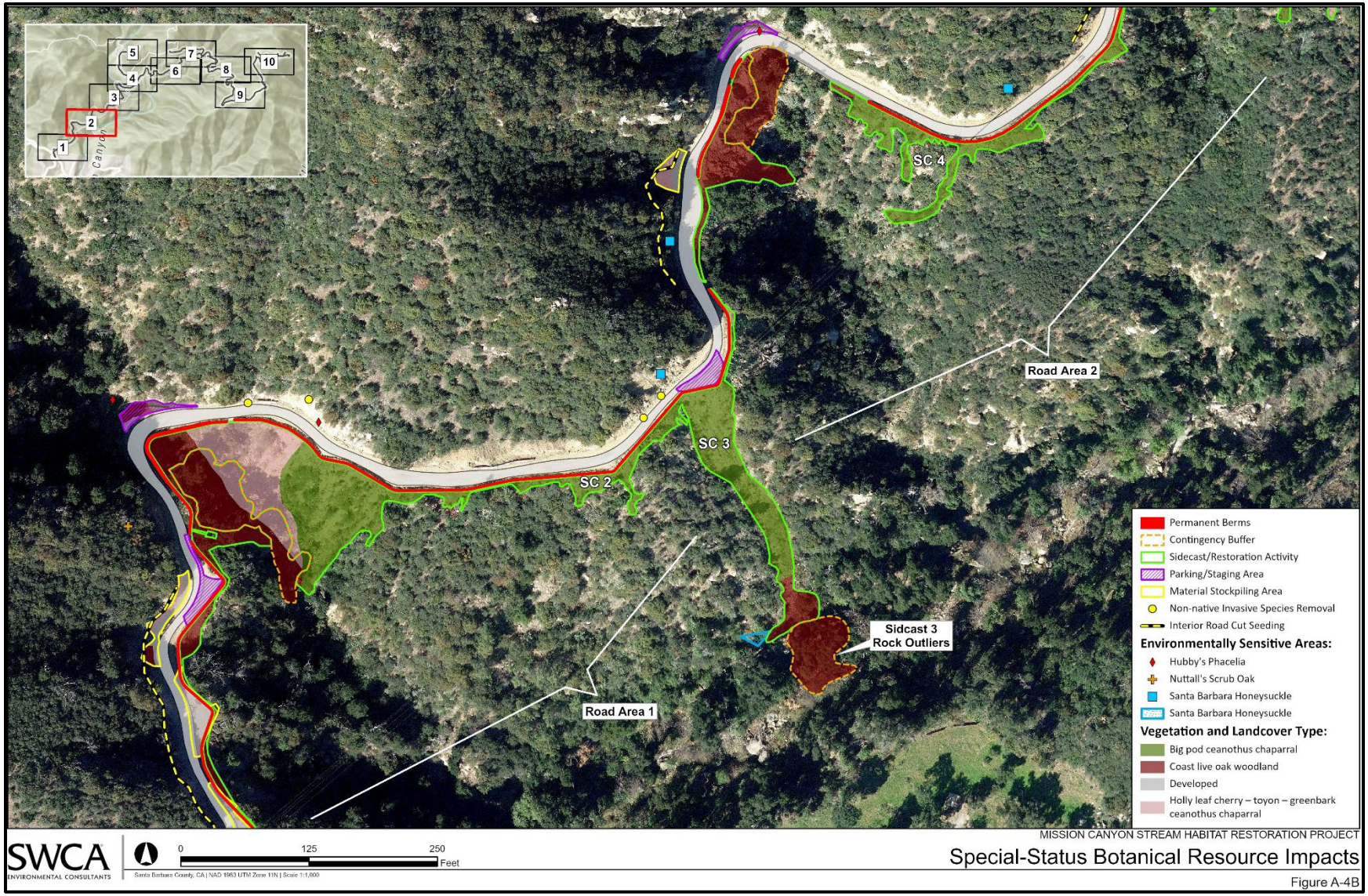

Figure A-4b. Botanical resource impacts (image 2 of 10).

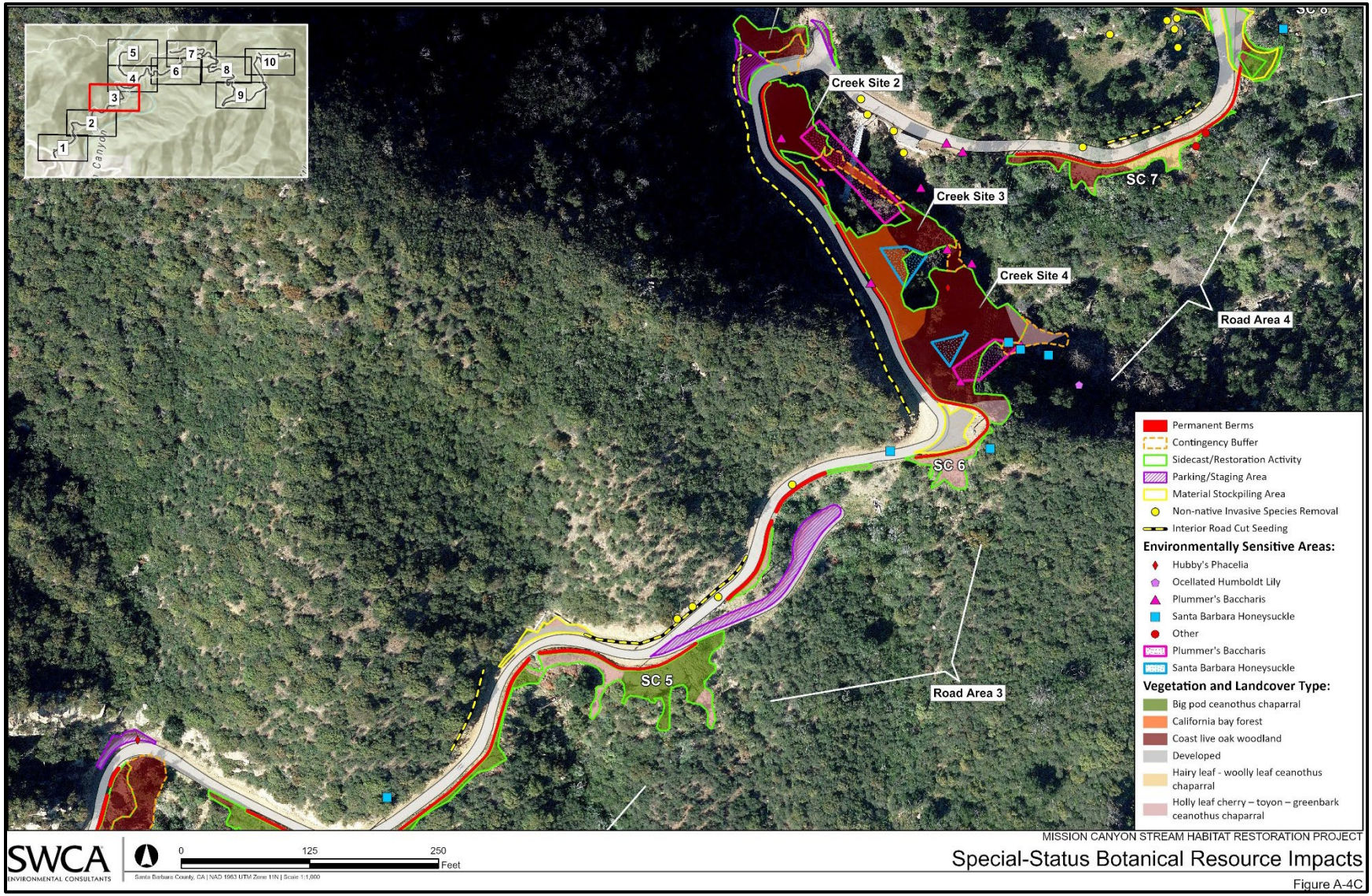

Figure A-4c. Botanical resource impacts (image 3 of 10).

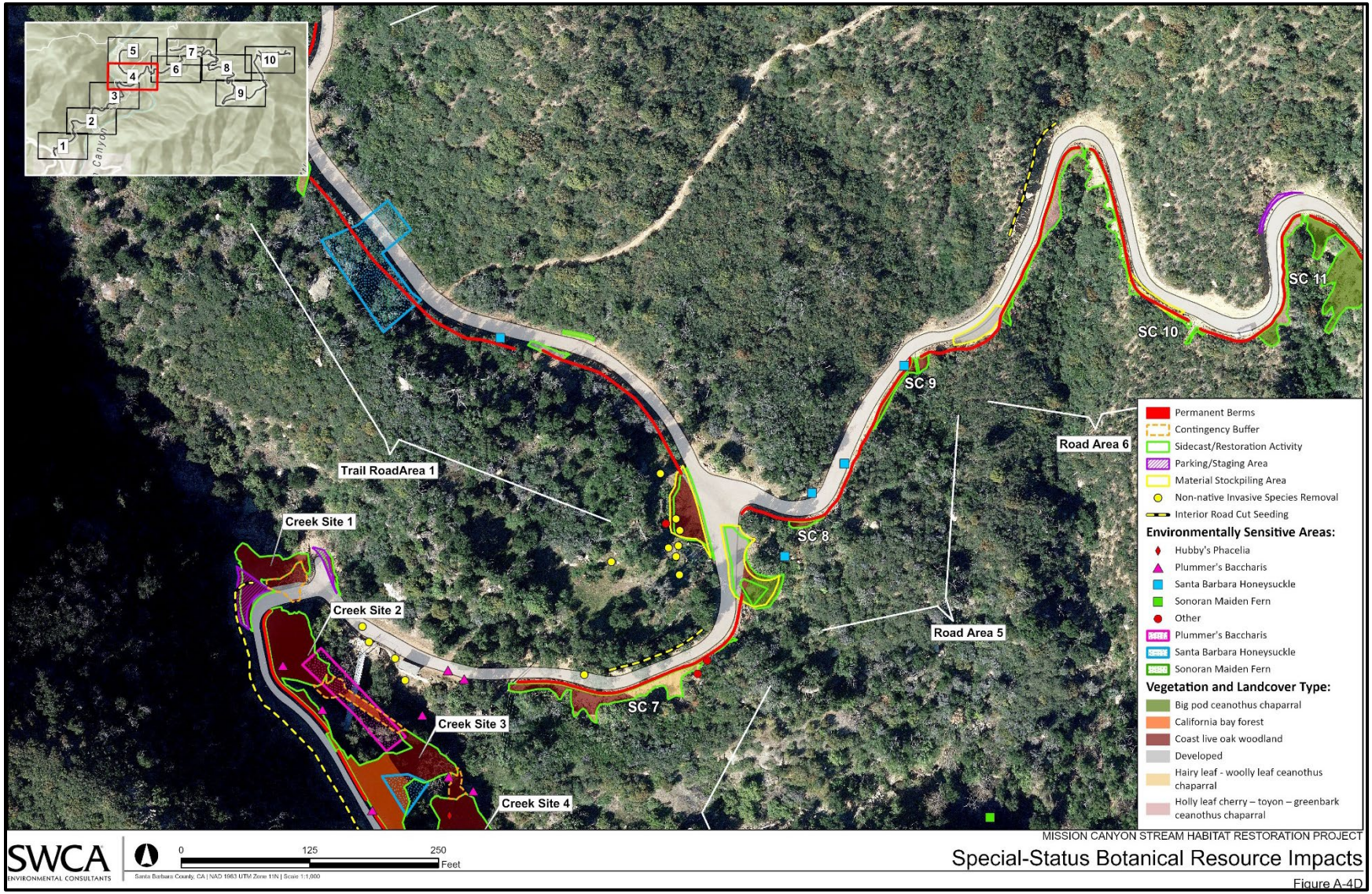

Figure A-4d. Botanical resource impacts (image 4 of 10).

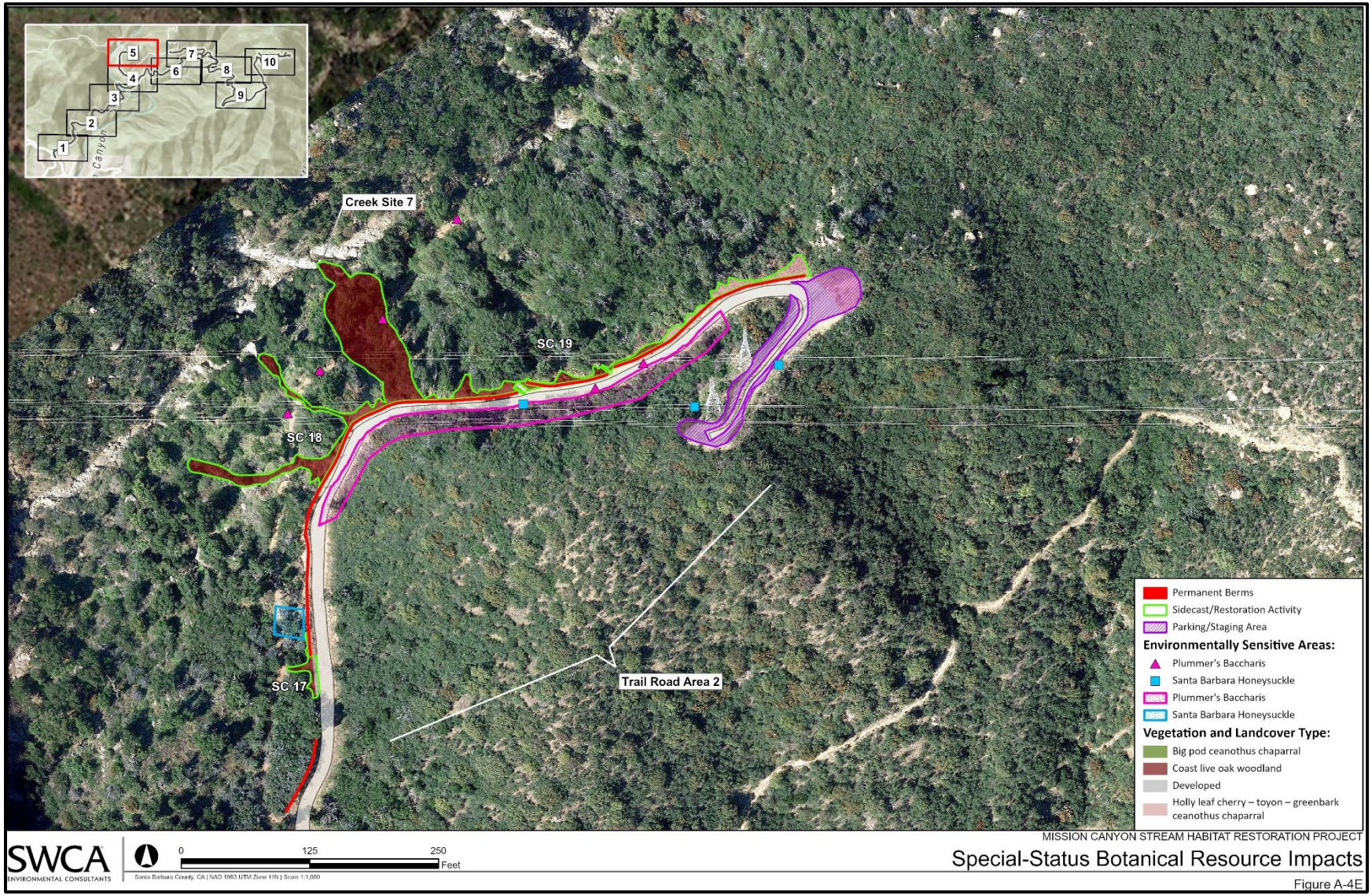

Figure A-4e. Botanical resource impacts (image 5 of 10).

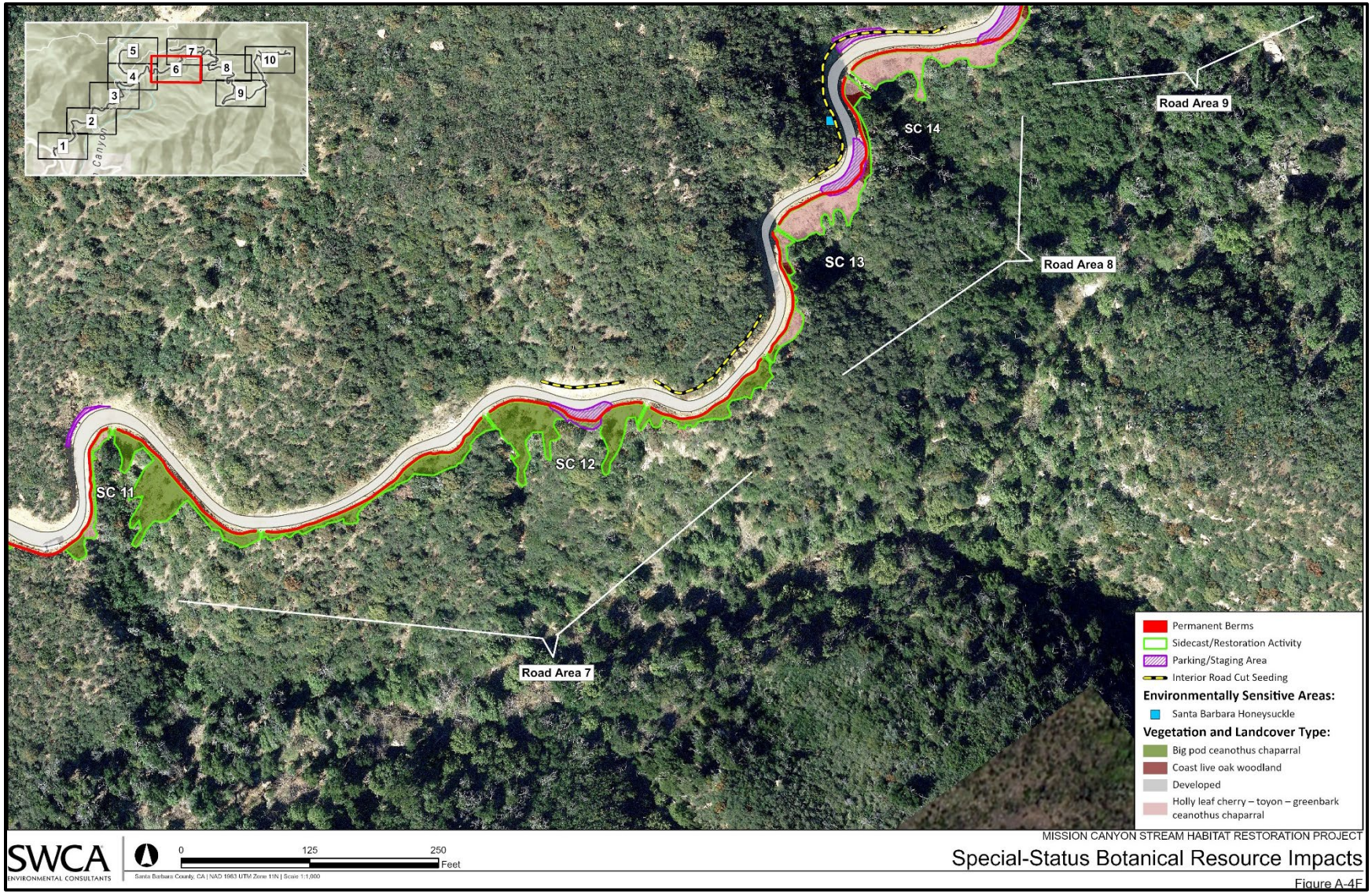

Figure A-4f. Botanical resource impacts (image 6 of 10).

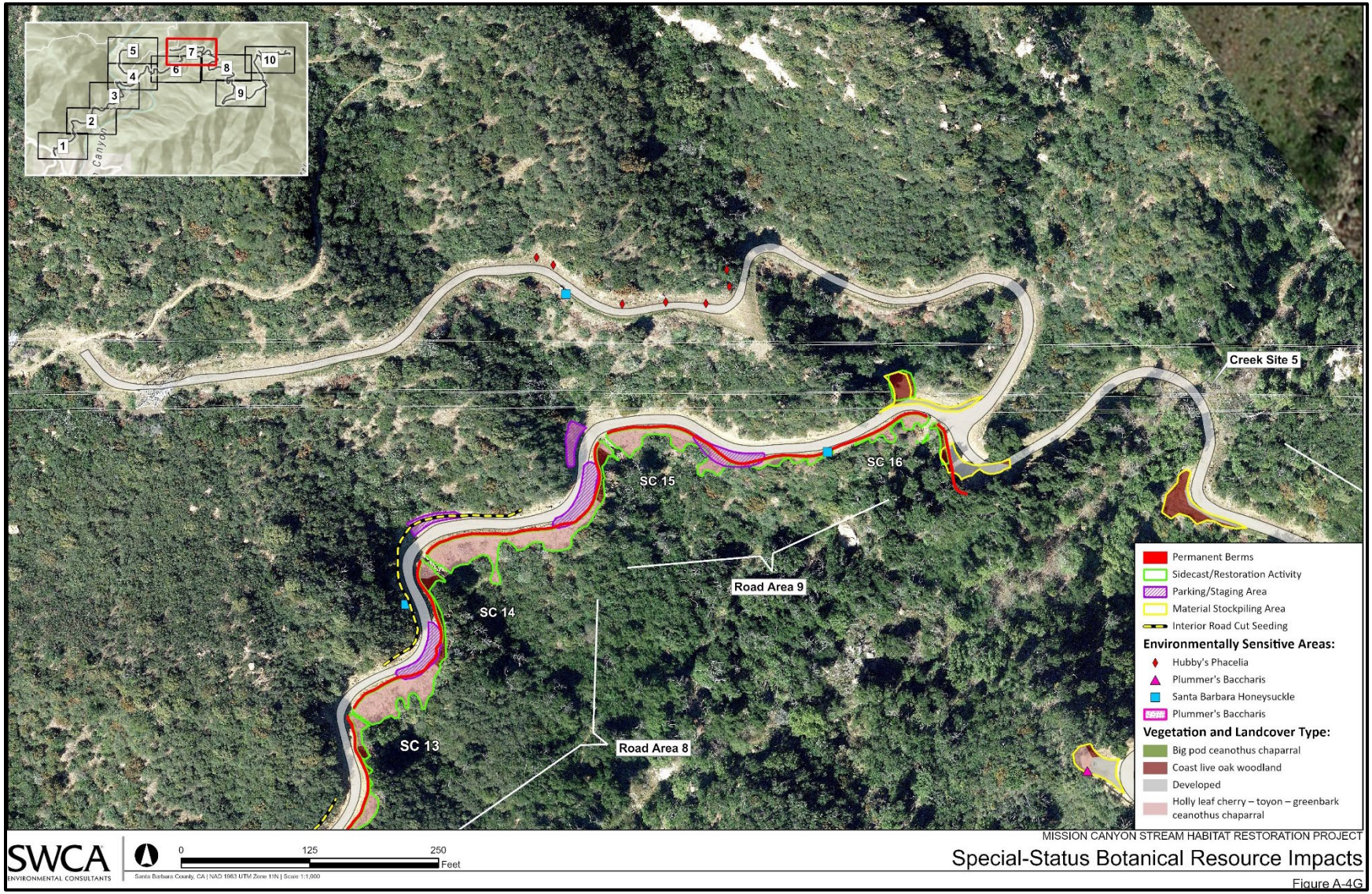

Figure A-4g. Botanical resource impacts (image 7 of 10).

Figure A-4h. Botanical resource impacts (image 8 of 10).

Figure A-4i. Botanical resource impacts (image 9 of 10).

Figure A-4j. Botanical resource impacts (image 10 of 10).

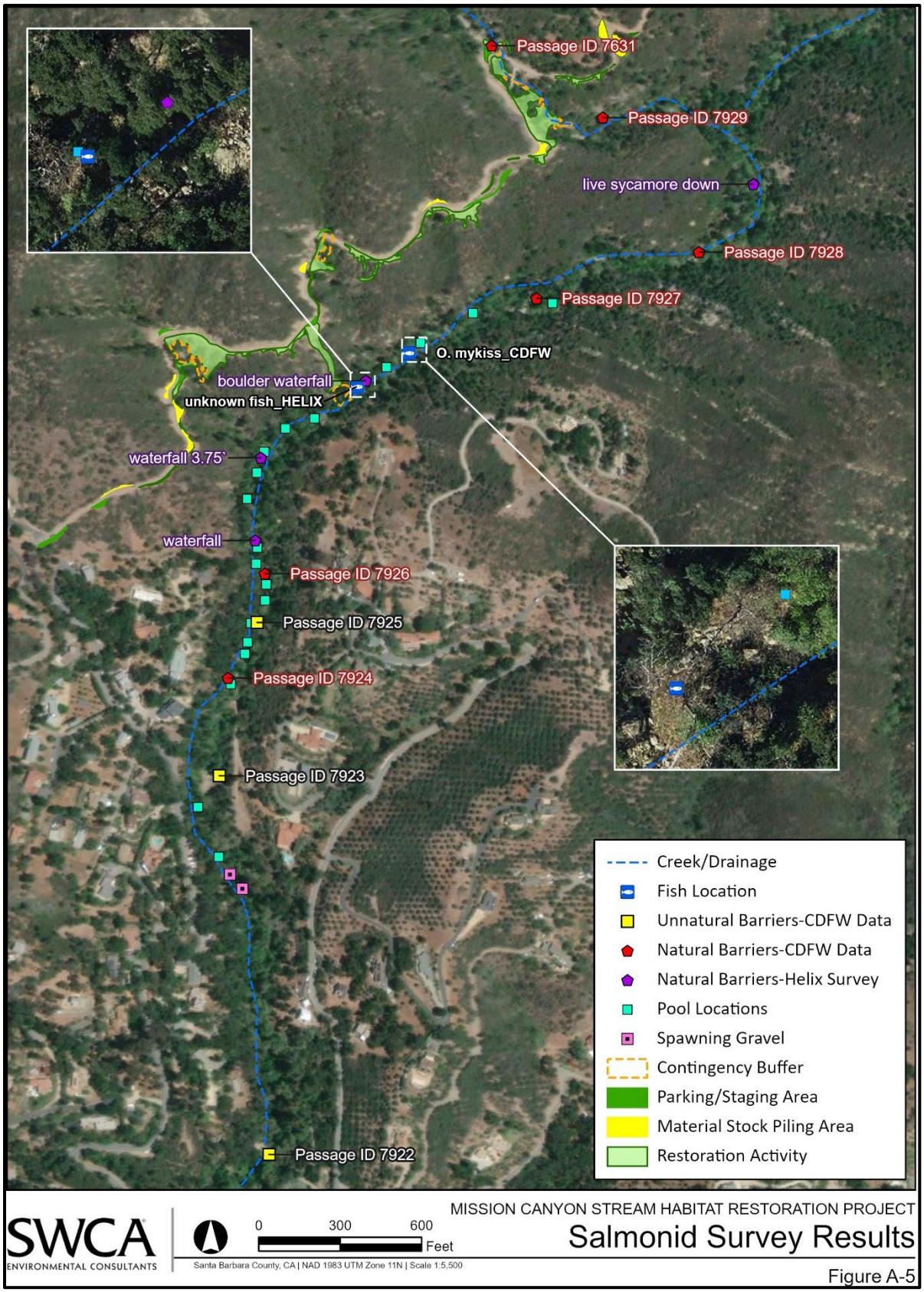

Figure A-5. Salmonid survey results.

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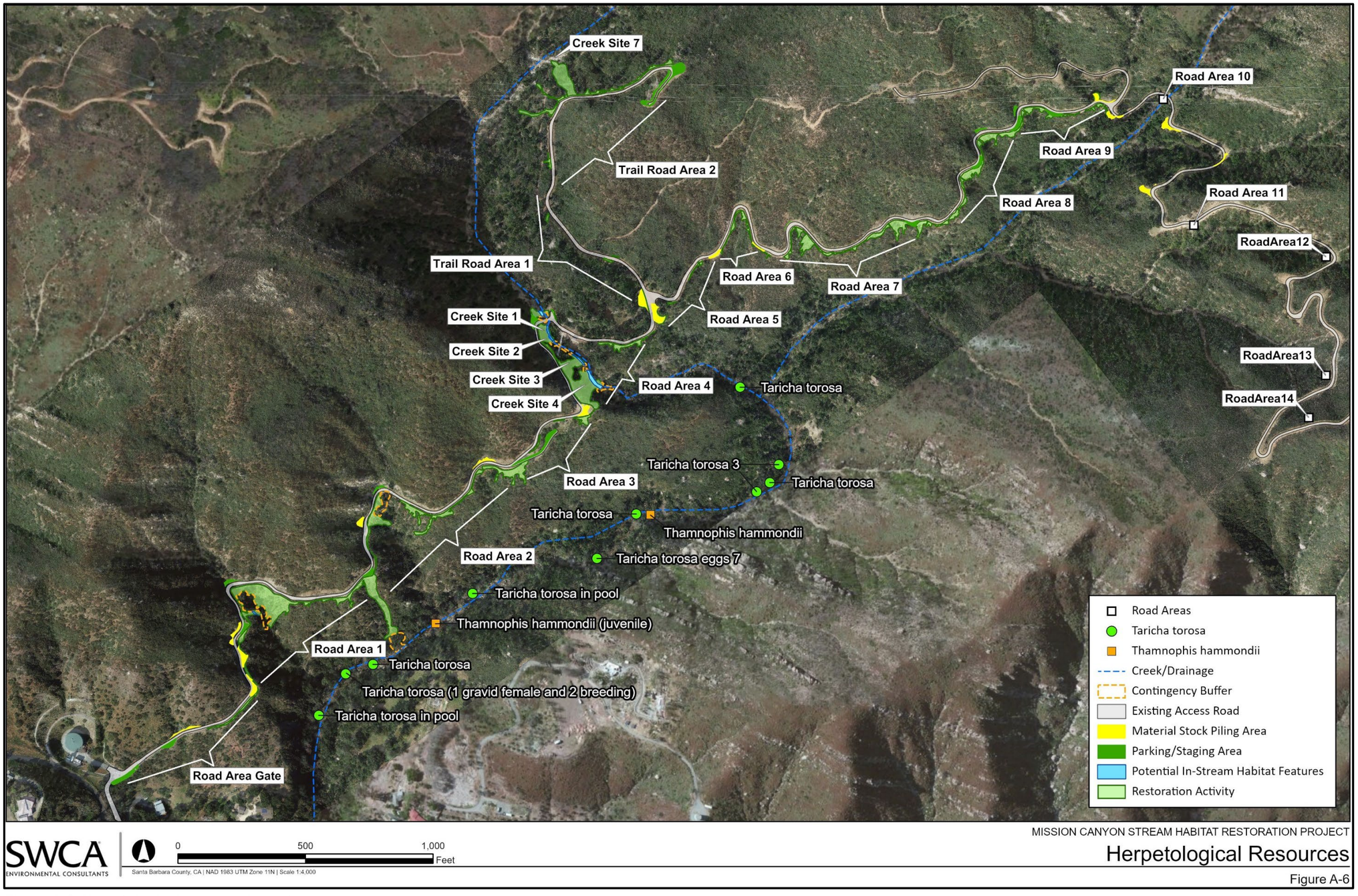


Figure A-6. Herpetological resource impacts.

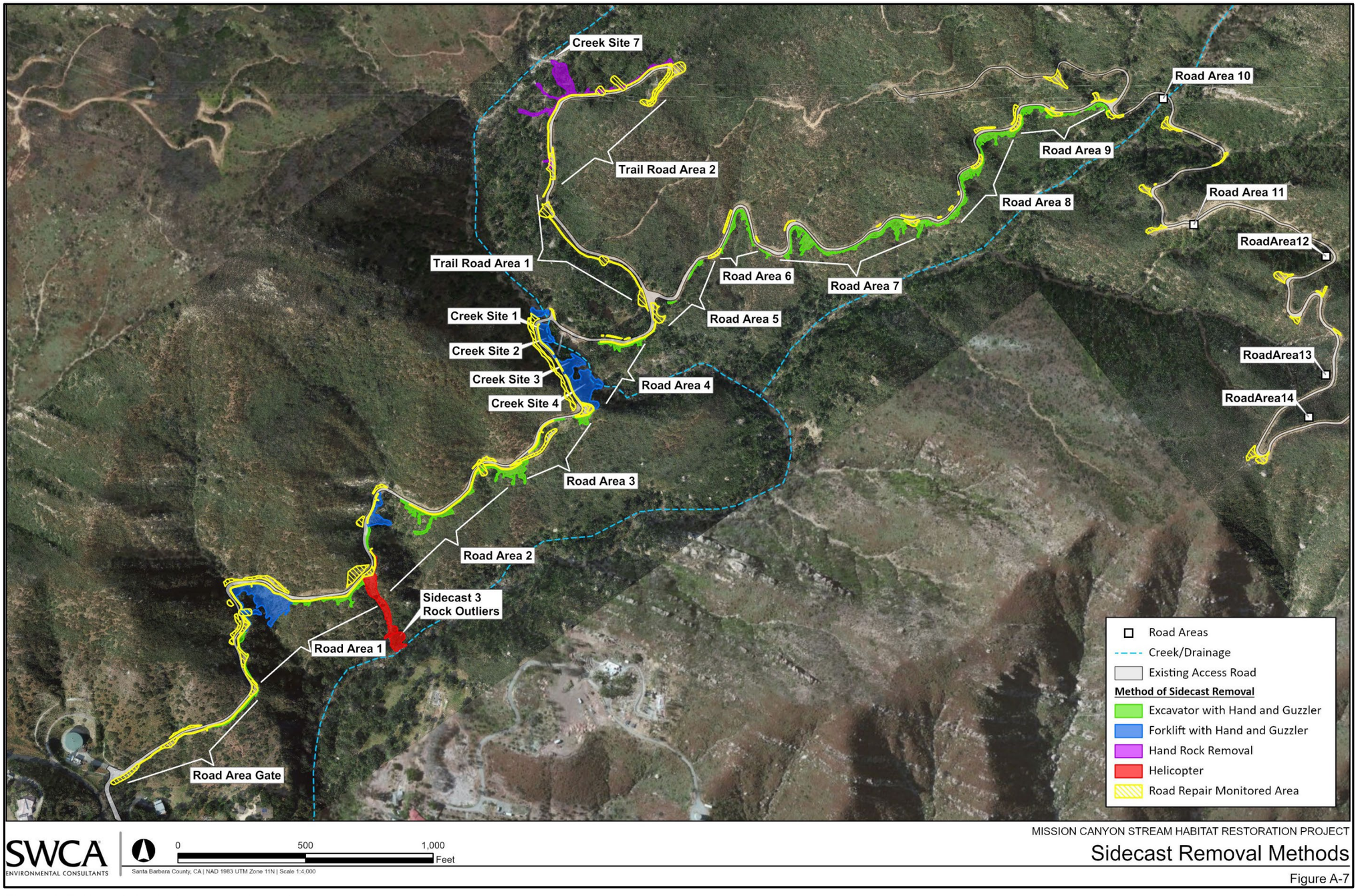


Figure A-7. Herpetological resource impacts.

APPENDIX B

Photographic Documentation

Additional site photographs can be found in previously submitted reports:

Mission Creek Biological Post Impact Report_02052020

Jesusita Trail Biological Post Impact Report_02062020

Mission Creek Revised Biological Impact Report_09232020

Photograph B-1. Flagged Plummer's baccharis (*Baccharis plummerae* ssp. *plummerae*) on road to tower storage site.

Photograph B-2. Plummer's baccharis (*Baccharis plummerae* ssp. *plummerae*) growing out of exposed rocky substrate near the Jesusita Trail junction on Spyglass Ridge Road.

Photograph B-3. Side-casts along the west bank of Mission Creek south of the bridge. Note the intact portions of the bank that support healthy individuals of Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*) and Plummer's baccharis (*Baccharis plummerae* ssp. *plummerae*); photograph taken June 2020.

Photograph B-4. Representative photograph of the mariposa lily (*Calochortus* sp.) in the vegetative growth stage with only the basal leaf present, found in the eastern portion of the project site.

Photograph B-5. Overview showing the distribution of mariposa lily (*Calochortus* sp.) in the road, found on the eastern portion of the project site.

Photograph B-6. Abruptly pointed anthers of the late-flowered mariposa lily (*Calochortus fimbriatus*); photograph taken June 2020.

Photograph B-7. Unevenly dispersed, long, and deeply colored fringe along the petal margin of the late-flowered mariposa lily (*Calochortus fimbriatus*); photograph taken July 2020.

Photograph B-8. Damaged Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*) on road up to the eastern storage site.

Photograph B-9. Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*) hanging by roots on cliffside on Spyglass Ridge Road less than 0.5 mile from gate entrance.

Photograph B-10. Santa Barbara honeysuckle (*Lonicera subspicata* var. *subspicata*) shrubs adjacent to hydromulch application on Mission Canyon Catway near the fork off Spyglass Ridge Road.

Photograph B-11. Overview photograph of Hubby's phacelia (*Phacelia hubbyi*) on the north side of Spyglass Ridge Road.

Photograph B-12. Closeup of Hubby's phacelia (*Phacelia hubbyi*) on the north side of Spyglass Ridge Road.

Photograph B-13. Hubby's phacelia (*Phacelia hubbyi*) growing out of a portion of the west bank of Mission Creek affected by the side-cast; photograph taken June 2020.

Photograph B-14. Closeup of coastal sage scrub oak (*Quercus dumosa*) located near gate entrance along Spyglass Ridge Road.

Photograph B-15. Coastal sage scrub oak (*Quercus dumosa*) population located near gate entrance along Spyglass Ridge Road.

Photograph B-16. Coastal sage scrub oak (*Quercus dumosa*) population located atop the road cut approximately 0.18 mile from gate entrance.

Photograph B-17. Historic population of the Sonoran maiden fern (*Pelazoneuron puberulum* var. *sonorense*) and corresponding dense mesic habitat located at the convergence of the east and west branches of Mission Creek; photograph taken June 2020.

Photograph B-18. One of several steelhead trout barriers observed along Mission Creek south of Mission Creek Bridge and upstream of the fish observations; photograph taken April 2020.

Photograph B-19. Example of several steelhead trout barriers observed along Mission Creek south of Mission Creek Bridge and near the fish observations; photograph taken April 2020.

Photograph B-20. One of the human-made barriers observed along Mission Creek south of Mission Creek Bridge and downstream of the fish observations; photograph taken April 2020.

Photograph B-21. Representative photograph of suitable newt and gartersnake habitat upstream of bridge near Jesusita Trail; photograph taken February 2020.

Photograph B-22. Representative photograph of newt and gartersnake habitat in creek near Jesusita Trail; photograph taken February 2020.

Photograph B-23. Coast range newt observed south of Mission Creek Bridge; photograph taken April 2020.

Photograph B-24. Two-striped gartersnake observed south of Mission Creek Bridge; photograph taken April 2020.

Photograph B-25. Orange flagged Santa Barbara honeysuckle, impacted by the road cut scraping, vulnerable to further erosion due to the cut away topsoil; photograph taken April 2020.

Photograph B-26. Impacted habitat downstream of Creek Site 3 and 4, facing west toward slide; no surface flow evident in this section of stream because of project impacts; photograph taken April 2020.

Photograph B-27. Impacted habitat downstream of Creek Site 3 and 4, facing north toward bridge; surface flow going underground upstream of project impacts; photograph taken April 2020.

Photograph B-28. Newt and gartersnake habitat downstream of Creek Site 4, further away from access road impacts, facing southeast (downstream); photograph taken December 2019.

Photograph B-29. Fallen shrubs, rock debris, and topsoil; vulnerable to further erosion due to an unstable cut rock wall; photograph taken April 2020.

Photograph B-30. A Santa Barbara honeysuckle individual inventoried as part of a pile of vegetation downed from the rock wall.

Photograph B-31. A single branch of Plummer's baccharis inventoried in a pile of downed vegetation.

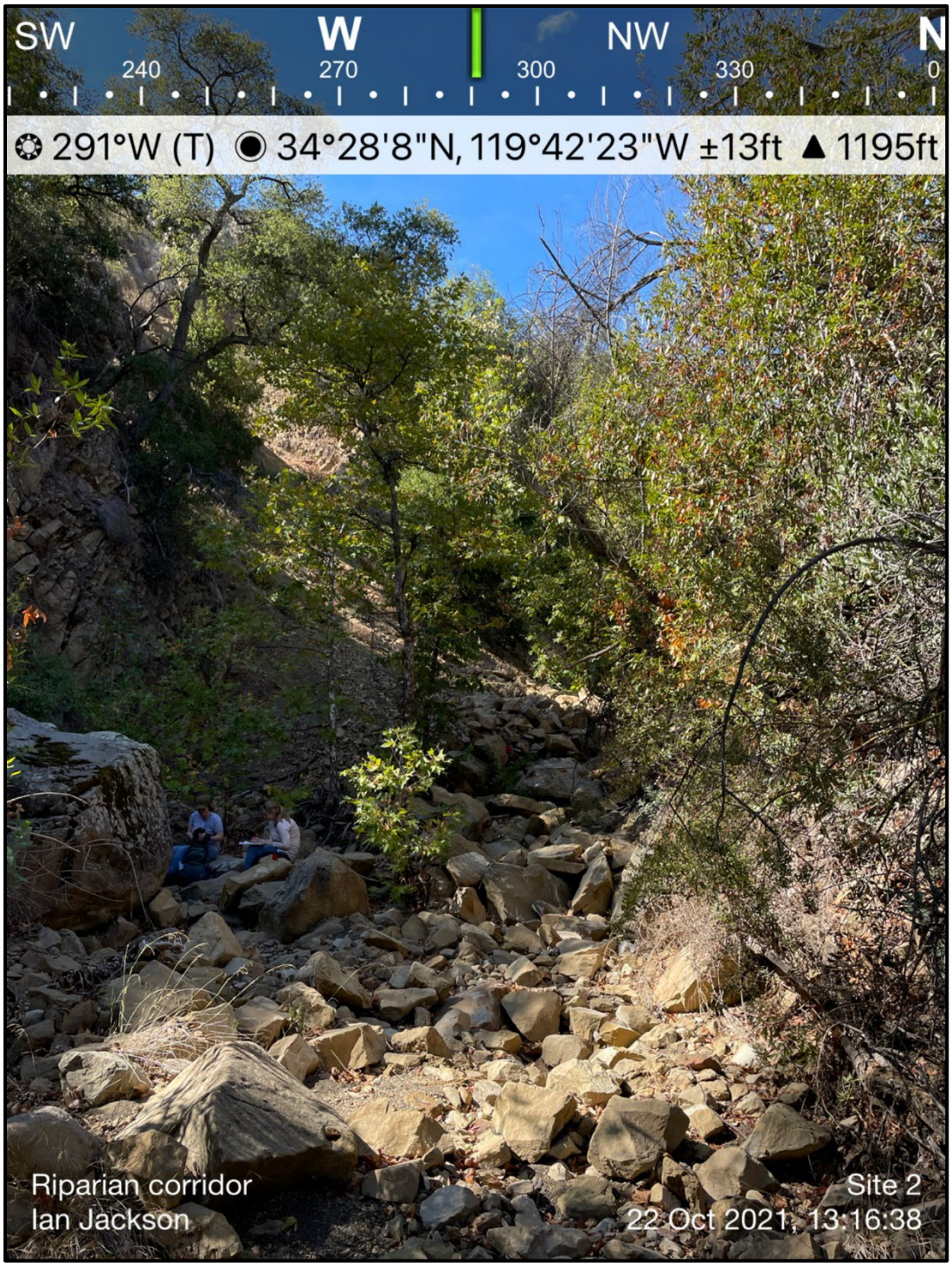
Photograph B-32. Habitat along the access route to the Road Area 1 outlier during the October 22, 2021 field survey, facing northeast.

Photograph B-33. Habitat within the contingency buffer at the Road Area 1 Outlier. Photographed during the October 22, 2021 field survey, facing north.

Photograph B-34. Sonoran maiden fern found along the access route to the Road Area 1 outlier. Photographed during the October 22, 2021 field survey.

Photograph B-35. Santa Barbara honeysuckle found in near the Road Area 1 outlier during the October 22, 2021 survey.

Photograph B-36. Habitat within the contingency buffer near Road Area 3. Photographed during the October 22, 2021 field survey, facing northeast.



Photograph B-37. Site photos at the contingency buffer near Road Area 3. Photographed during the October 22, 2021 field survey, facing west.

Photograph B-38. Plummer's baccharis identified near the contingency buffer near Road Area 3. Photographed during the October 22, 2021 field survey.

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APPENDIX C

Plant Species Observed within the Project Area

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Table C-1. Plant Species within the Project Area

Scientific Name	Common Name
FERNS	
BLECHINACEAE	**CHAIN FERN FAMILY**
Woodwardia fimbriata	giant chain fern
DENNSTAEDTIACEAE	**BRAKEN FAMILY**
Pteridium aquilinum var. *pubescens*	western bracken fern
DRYOPTERIDACEAE	**WOOD FERN FAMILY**
Dryopteris arguta	coastal wood fern
EQUISETACEAE	**HORSETAIL FERN FAMILY**
Equisetum telmateia ssp. *braunii*	giant horsetail
POLYPODIACEAE	**POLYPODY FAMILY**
Polypodium californicum	California polypody
PTERIDACEAE	**BRAKE FAMILY**
Adiantum jordanii	California maidenhair fern
Aspidotis californica	California lace fern
Pellaea andromedifolia	coffee fern
Pellaea mucronata var. *mucronata*	bird's-foot fern
Pentagramma triangularis ssp. *triangularis*	goldenback fern
THELYPTERIDACEAE	**THELYPTERIS FAMILY**
Pelazoneuron puberulum var. *sonorense*†‡	Sonoran maiden fern
MAGNOLIIDS	
LAURACEAE	**LAUREL FAMILY**
Umbellularia californica	California laurel
ANGIOSPERMS (EUDICOTS)	
ADOXACEAE	**MUSKROOT FAMILY**
Sambucus nigra ssp. *caerulea*	blue elderberry
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**
Malosma laurina	laurel sumac
Rhus integrifolia	lemonadeberry
*Schinus molle**	Brazilian peppertree
Toxicodendron diversilobum	poison oak
APIACEAE	**CARROT FAMILY**
Anthriscus caucalis	bur-chervil

Scientific Name	Common Name
Apiastrum angustifolium	wild celery
*Conium maculatum**	poison hemlock
*Foeniculum vulgare**	fennel
Tauschia arguta	southern tauschia
*Torilis arvensis**	field hedge parsley
APOCYNACEAE	**DOGBANE FAMILY**
*Vinca major**	greater periwinkle
ASTERACEAE	**SUNFLOWER FAMILY**
Acourtia microcephala	sacapellote
Ageratina adenophora	thoroughwort
Artemisia californica	California sagebrush
Artemisia douglasiana	California mugwort
Baccharis pilularis	coyote bush
Baccharis plummerae var. *plummerae*†	Plummer's baccharis (CRPR 4.3)
Bidens pilosa	beggar-ticks
Brickellia californica	California brickellbush
*Centaurea melitensis**	tocalote
Cirsium occidentale var. *californicum*	cobweb thistle
Corethrogyne filaginifolia var. *filaginifolia*	common sand-aster
*Cotula australis**	Australian brass-buttons
*Delairea odorata**	Cape ivy
Encelia californica	California brittlebush
Eriophyllum confertiflorum var. *confertiflorum*	long-stem golden-yarrow
Hazardia squarrosa var. *grindelioides*	saw-toothed goldenbush
*Hedypnois cretica**	crete hedypnois
Hieracium argutum	southern hawkweed
Helianthus annuus cv.	ornamental annual sunflower
*Hypochaeris glabra**	smooth cat's-ear
Logfia filaginoides	California cottonrose
Madia gracilis	grassy tarweed
Malacothrix saxatilis var. *tenuifolia*	cliff malacothrix
*Matricaria discoidea**	common pineapple-weed
Pseudognaphalium biolettii	two-color rabbit-tobacco

Scientific Name	Common Name
Pseudognaphalium californicum	California everlasting
Pseudognaphalium microcephalum	Wright's cudweed
Rafinesquia californica	California chicory
*Senecio vulgaris**	common groundsel
*Silybum marianum**	milk thistle
Solidago velutina ssp. *californica*	California goldenrod
*Sonchus asper**	spiny sowthistle
*Sonchus oleraceus**	common sowthistle
Uropappus lindleyi	silver puff
*Urospermum picroides**	bristly tail seed
Venegasia carpesioides	canyon-sunflower
BETULACEAE	**BIRCH FAMILY**
Alnus rhombifolia	white alder
BORAGINACEAE	**BORAGE FAMILY**
Cryptantha microstachys	Tejon cryptantha
Emmenanthe penduliflora	whispering bells
Eriodictyon crassifolium	thick-leaved yerba santa
Eucrypta chrysanthemifolia var. *chrysanthemifolia*	common eucrypta
Phacelia cicutaria	caterpillar phacelia
Phacelia hubbyi	Hubby's phacelia (CRPR 4.2)
Phacelia grandiflora	giant flowered phacelia
Phacelia ramosissima	branching phacelia
Phacelia viscida var. *albiflora*	sticky phacelia
Pholistoma auritum var. *auritum*	fiesta flower
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica nigra**	black mustard
*Capsella bursa-pastoris**	shepherd's purse
Cardamine californica	milkmaids
*Hirschfeldia incana**	shortpod mustard
Lepidium nitidum	shining peppergrass
*Sisymbrium officinale**	hedge mustard
Thysanocarpus laciniatus	mountain fringepod

Scientific Name	Common Name
CAPRIFOLIACEAE	**HONEYSUCKLE FAMILY**
Lonicera subspicata var. *subspicata*†	Santa Barbara honeysuckle (CRPR 1B.2)
Symphoricarpos mollis	creeping snowberry
CARYOPHYLLACEAE	**PINK FAMILY**
*Cerastium glomeratum**	mouse-ear chickweed
*Silene gallica**	common catchfly
Silene laciniata ssp. *laciniata*	cardinal catchfly
Spergula arvensis	corn spurry
*Stellaria media**	common chickweed
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex lentiformis	big saltbush
*Chenopodium album**	lamb's quarters
*Salsola tragus**	Russian thistle
CISTACEAE	**ROCK-ROSE FAMILY**
Crocanthemum scoparium var. *vulgare*	peak rush-rose
CONVOLVULACEAE	**MORNING-GLORY FAMILY**
Calystegia macrostegia ssp. *cyclostegia*	coast morning-glory
CRASSULACEAE	**STONECROP FAMILY**
Dudleya lanceolata	lance-leaved dudleya
CUCURBITACEAE	**GOURD FAMILY**
Marah macrocarpa	wild cucumber
DATISCACEAE	**DATISCA FAMILY**
Datisca glomerata	Durango root
ERICACEAE	**HEATH FAMILY**
Arctostaphylos glandulosa	Eastwood's manzanita
Arctostaphylos glauca	bigberry manzanita
EUPHORBIACEAE	**SPURGE FAMILY**
Euphorbia terracina	Geraldton carnation weed
*Ricinus communis**	castor-bean
FABACEAE	**LEGUME FAMILY**
*Acacia mearnsii**	black wattle
Acmispon glaber var. *glaber*	deerweed
Acmispon maritimus var. *maritimus*	coastal lotus

Scientific Name	Common Name
*Genista monspessulana**	French broom
Lathyrus vestitus var. *vestitus*	canyon sweet pea
Lupinus bicolor	miniature lupine
*Medicago polymorpha**	bur clover
*Melilotus indica**	sourclover
Pickeringia montana var. *montana*	chaparral pea
Rupertia physodes	forest scurfpea
*Trifolium hirtum**	rose clover
GERANIACEAE	**GERANIUM FAMILY**
*Erodium botrys**	broad-lobed filaree
*Erodium moschatum**	white-stemmed filaree
*Pelargonium × hortorum**	garden pelargonium
GROSSULARIACEAE	**GOOSEBERRY FAMILY**
Ribes californicum var. *hesperium*	California gooseberry
Ribes malvaceum	chaparral currant
Ribes speciosum	fuschia-flowered gooseberry
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	horehound
Salvia leucophylla	purple sage
Salvia mellifera	black sage
Salvia spathacea	hummingbird sage
Stachys bullata	California hedge-nettle
Trichostema lanatum	woolly bluecurls
MALVACEAE	**MALLOW FAMILY**
Malacothamnus fasciculatus var. *nuttallii*	Nuttall's bush mallow
*Malva parviflora**	cheeseweed
MONTIACEAE	**MINER'S LETTUCE FAMILY**
Calandrinia menziesii	red maids
Claytonia parviflora ssp. *parviflora*	streambank springbeauty
MORACEAE	**MULBERRY FAMILY**
*Ficus carica**	common fig
MYRSINACEAE	**MYRSINE FAMILY**
*Lysimachia arvensis**	scarlet pimpernel

Scientific Name	Common Name
OLEACEAE	**OLIVE FAMILY**
*Olea europaea**	olive
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissoniopsis sp.	suncup
Clarkia bottae	Botta's clarkia
Clarkia unguiculata	elegant clarkia
Epilobium canum ssp. *canum*	California fuchsia
Eulobus californicus	California evening primrose
OROBANCHACEAE	**BROOM-RAPE FAMILY**
Castilleja foliolosa	woolly Indian paintbrush
OXALIDACEAE	**OXALIS FAMILY**
Oxalis californica	California wood-sorrel
*Oxalis pes-caprae**	Bermuda buttercup
PAPAVERACEAE	**POPPY FAMILY**
Dendromecon rigida	bush poppy
PHRYMACEAE	**LOPSEED FAMILY**
Diplacus longiflorus	bush monkeyflower
PLANTAGINACEAE	**PLANTAIN FAMILY**
Antirrhinum coulterianum‡	Coulter's snapdragon
Antirrhinum multiflorum	many-flowered snapdragon
Keckiella cordifolia	heart leaved keckiella
*Plantago lanceolata**	English plantain
Quercus agrifolia	coast live oak
Quercus dumosa‡	coastal sage scrub oak (CRPR 1B.1)
PLATANACEAE	**SYCAMORE FAMILY**
Platanus racemosa	western sycamore
POLEMONIACEAE	**PHLOX FAMILY**
Linanthus californicus	prickly phlox
POLYGONACEAE	**BUCKWHEAT FAMILY**
Eriogonum elongatum var. *elongatum*	long-stemmed buckwheat
Eriogonum fasciculatum	California buckwheat
Eriogonum sp.	annual buckwheat
Polygonum aviculare ssp. *depressum*	prostrate knotweed

Scientific Name	Common Name
Pterostegia drymarioides	fairy mist
RANUNCULACEAE	**BUTTERCUP FAMILY**
Clematis lasiantha	pipestems
Thalictrum fendleri var. *polycarpum*	Fendler's meadow rue
RHAMNACEAE	**BUCKTHORN FAMILY**
Ceanothus megacarpus var. *megacarpus*	big-podded ceanothus
Ceanothus oliganthus var. *oliganthus*	hairy-leaf ceanothus
Ceanothus spinosus	green bark ceanothus
Rhamnus crocea	spiny redberry
Rhamnus ilicifolia	holly-leaf redberry
ROSACEAE	**ROSE FAMILY**
Adenostoma fasciculatum	chamise
Cercocarpus betuloides var. *betuloides*	birchleaf mountain-mahogany
*Cotoneaster pannosus**	silver-leaf cotoneaster
Heteromeles arbutifolia	Toyon
Prunus ilicifolia subsp. *ilicifolia*	holly-leaf cherry
Rubus ursinus	California blackberry
RUBIACEAE	**MADDER FAMILY**
Galium angustifolium subsp. *angustifolium*	narrow-leaved bedstraw
Galium aparine	common bedstraw
Galium porrigens var. *porrigens*	climbing/oval-leaf bedstraw
SALICACEAE	**WILLOW FAMILY**
Populus trichocarpa	Fremont cottonwood
Salix lasiolepis	arroyo willow
SAPINDACEAE	**SOAPBERRY FAMILY**
Acer macrophyllum	big-leaf maple
SCROPHULARIACEAE	**FIGWORT FAMILY**
Scrophularia californica	California figwort
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimson weed
*Nicotiana glauca**	tree tobacco
Solanum douglasii	Douglas' nightshade
Solanum xanti	chaparral nightshade

Scientific Name	Common Name
STYRACACEAE	**STORAX FAMILY**
Styrax redivivus	snowdrop bush
URTICACEAE	**NETTLE FAMILY**
Hesperocnide tenella	western stinging nettle
VERBENACEAE	**VERVAIN FAMILY**
Verbena sp.	vervain
ANGIOSPERMS (MONOCOTS)	
AGAVACEAE	**AGAVE FAMILY**
*Agave americana**	century plant
Chlorogalum pomeridianum var. *pomeridianum*	wavy-leaf soap-plant/amole
Hesperoyucca whipplei	Our Lord's candle
AMARYLLIDACEAE	**AMARYLLIS FAMILY**
*Agapanthus praecox**	lily-of-the-Nile
CYPERACEAE	**SEDGE FAMILY**
Carex globose	round fruit sedge
LILIACEAE	**LILY FAMILY**
Calochortus fimbriatus‡	late-blooming mariposa lily
Lilium humboldtii ssp. *ocellatum*‡	ocellated Humboldt lily
MELANTHIACEAE	**BUNCHFLOWER FAMILY**
Toxicoscordion c.f. *fremontii*	Fremont's star lily
POACEAE	**GRASS FAMILY**
*Arundo donax**	giant reed
*Avena barbata**	wild oat
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
Bromus madritensis subsp. *rubens**	red brome
*Cortaderia jubata**	jubatagrass
Elymus condensatus	giant wild rye
*Festuca myuros**	rat-tail fescue
*Festuca perennis**	Italian ryegrass
*Hordeum murinum**	glaucous foxtail barley
*Lamarckia aurea**	goldentop
Melica imperfecta	coast range melic

Scientific Name	Common Name
*Pennisetum setaceum**	crimson fountaingrass
*Polypogon interruptus**	ditch beard grass
Stipa miliacea var. *miliacea**	smilo grass
THEMIDACEAE	**BRODIAEA FAMILY**
Dichelostemma capitatum	blue dicks

*Nonnative species

†Special-status plant species

‡ Included on Draft Rare Plants of Santa Barbara County (Wilkens 2018)

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APPENDIX D

Occurrence or Potential Occurrence for Special-Status Plant Species, based on location data from the California Natural Diversity Database

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Table D-1. Occurrence or Potential Occurrence for Special-Status Plant Species, based on location data from the California Natural Diversity Database and Species with the potential to occur based on the Draft Rare Plants of Santa Barbara County (Dieter 2018).

Common Name Scientific Name	Habitat Description*	Species Status†	Potential to Occur
Refugio manzanita, *Arctostaphylos refugioensis*	Chaparral. On sandstone. 60–765 meters (m). Blooming period: Dec–Mar.	CRPR 1B.2	**Absent**. Species was not observed within the project area. Known CNDDB occurrences are 6.7 miles west of the project area.
Miles' milk-vetch, *Astragalus didymocarpus var. milesianus*	Coastal scrub. Clay soils. 50–385 m. Blooming period: Mar–Jun.	CRPR 1B.2	Does not occur. No suitable habitat is present in the project area. The only known nearby occurrence is from 1961 and approximately 5 miles north of the project area.
Coulter's saltbush, *Atriplex coulteri*	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland. Ocean bluffs, ridgetops, as well as alkaline low places. Alkaline or clay soils. 2–460 m. Blooming period: Mar–Oct.	CRPR 1B.2	Does not occur. No suitable habitat is present in the project area. The only known nearby occurrence is from 1956 and approximately 3 miles south of the project area.
Davidson's saltscale, *Atriplex serenana* var. *davidsonii*	Coastal bluff scrub, coastal scrub. Alkaline soil. 0–480 m. Blooming period: Apr–Oct.	CRPR 1B.2	Does not occur. No suitable habitat is present in the project area. The only known nearby occurrence is from 1947 and approximately 4.7 miles south of the project area.
Plummer's baccharis, *Baccharis plummerae* ssp. *plummerae*	Broadleaf upland forest, cismontane woodland, coastal scrub, chaparral. Brushy canyons and mountainsides near the sea; usually shaded north-facing slopes. Rocky substrates. 5–425 m. Blooming period: Mar–Oct.	CRPR 4.3	**Occurs**. Species was documented within the project area during the field surveys.
Late-flowered mariposa lily, *Calochortus fimbriatus*	Chaparral, cismontane woodland, riparian woodland. Dry, open coastal woodland, chaparral; on serpentine. 270–1,645 m. Blooming period: Jun–Aug.	CRPR 1B.3	**Occurs**. This species was confirmed to be present within the project area during the protocol rare plant surveys.
Palmer's mariposa lily, *Calochortus palmeri* var. *palmeri*	Meadows and seeps, chaparral, lower montane coniferous forest. Vernally moist places in yellow-pine forest, chaparral. 195–2,530 m. Blooming period: Apr–Jul.	CRPR 1B.2	Does not occur. No suitable habitat is present in the project area. The nearest occurrence is from 1947 and approximately 8 miles east of the project area.
Santa Barbara morning-glory, *Calystegia sepium* ssp. *binghamiae*	Marshes and swamps (coastal). 0–30 m. Blooming period: Apr–May.	CRPR 1A	Does not occur. No suitable habitat. The known occurrences in the project vicinity are considered extirpated.

Common Name Scientific Name	Habitat Description*	Species Status†	Potential to Occur
Southern tarplant, *Centromadia parryi* ssp. *australis*	Marshes and swamps (margins), valley and foothill grassland, vernal pools. Often in disturbed sites near the coast at marsh edges; also in alkaline soils sometimes with saltgrass. Sometimes on vernal pool margins. 0–975 m. Blooming period: May–Nov.	CRPR 1B.1	Does not occur. No suitable habitat is present in the project area. The nearest occurrence is from 1952 and approximately 4.6 miles southwest of the project area.
Salt marsh bird's-beak, *Chloropyron maritimum* ssp. *maritimum*	Marshes and swamps, coastal dunes. Limited to the higher zones of salt marsh habitat. 0–10 m. Blooming period: Mar–Oct.	FE, SE, CRPR 1B.2	Does not occur. No suitable habitat is present in the project area. The nearest occurrence is from 2017 and approximately 10.2 miles southeast of the project area.
Long-spined spineflower, *Chorizanthe polygonoides* var. *longispina*	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools. Gabbroic clay. 30–1,630 m. Blooming period: Apr–Jul.	CRPR 1B.2	Does not occur. No suitable habitat is present in the project area. All CNDDB occurrences are over 20 miles from the project area.
Umbrella larkspur, *Delphinium umbraculorum*	Cismontane woodland, chaparral. Mesic sites. 215–2,075 m. Blooming period: Apr–Jun.	CRPR 1B.3	**Absent**. Suitable habitat is present within the project area. However, none were found during the protocol rare plant survey. Species is known to occur approximately 1.5 miles east within San Roque Creek.
Ojai fritillary, *Fritillaria ojaiensis*	Broadleaved upland forest (mesic), chaparral, lower montane coniferous forest, cismontane woodland. Rocky sites. Sometimes on serpentine; sometimes along roadsides. 95–1,140 m. Blooming period: Feb-May.	CRPR 1B.2	**Absent**. Reference populations were checked during the protocol rare plant surveys. None were found within the project area. In addition, suitable habitat is not present within the project area.
Mesa horkelia, *Horkelia cuneata* var. *puberula*	Chaparral, cismontane woodland, coastal scrub. Sandy or gravelly sites. 15–1,645 m. Blooming period: Feb–Jul.	CRPR 1B.1	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is approximately 2.5 miles east of the project area.
Santa Lucia dwarf rush, *Juncus luciensis*	Vernal pools, meadows and seeps, lower montane coniferous forest, chaparral, Great Basin scrub. Vernal pools, ephemeral drainages, wet meadow habitats and streamsides. 280–2,035 m. Blooming period: Apr–Jul.	CRPR 1B.2	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is approximately 7.4 miles northwest of the project area.
Contra Costa goldfields, *Lasthenia conjugens*	Valley and foothill grassland, vernal pools, alkaline playas, cismontane woodland. Vernal pools, swales, low depressions, in open grassy areas. 1-450 m. Blooming period: Mar–Jun.	FE, CRPR 1B.1	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is approximately 8.8 miles southwest of the project area.

Common Name Scientific Name	Habitat Description*	Species Status†	Potential to Occur
Coulter's goldfields, *Lasthenia glabrata* ssp. *coulteri*	Coastal salt marshes, playas, vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. 1–1,375 m. Blooming period: Feb–Jun.	CRPR 1B.1	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is approximately 8.6 miles southwest of the project area.
Pale-yellow layia, *Layia heterotricha*	Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland. Alkaline or clay soils; open areas. 90–1,800 m. Blooming period: Mar–Jun.	CRPR 1B.1	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is approximately 4.4 miles west of the project area.
Ocellated Humboldt lily, *Lilium humboldtii* ssp. *ocellatum*	Chaparral, coastal scrub, cismontane woodland, lower montane coniferous forest, riparian forest. Yellow-pine forest or openings, oak canyons. 30–1,800 m. Blooming period: Mar–Jul.	CRPR 4.2	**Occurs**. Species was documented within the project area during the protocol rare plant survey.
Santa Barbara honeysuckle, *Lonicera subspicata* var. *subspicata*	Chaparral, cismontane woodland, coastal scrub. 5–825 m. Blooming period: May–Aug.	CRPR 1B.2	**Occurs**. Species was documented within the project area during the protocol rare plant survey.
Carmel Valley malacothrix, *Malacothrix saxatilis* var. *arachnoidea*	Chaparral, coastal scrub. Rock outcrops or steep rocky roadcuts. 30–1,040 m. Blooming period: Jun–Dec.	CRPR 1B.2	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is approximately 7.7 miles north of the project area.
White-veined monardella, *Monardella hypoleuca* ssp. *hypoleuca*	Chaparral, cismontane woodland. Dry slopes. 50–1,280 m. Blooming period: Jun–Aug.	CRPR 1B.3	**Absent**. Suitable habitat is present within the project area. There are CNDDB occurrences documented from 1923 to 1951 in the northern portion of Mission Canyon. A more recent occurrence (2005) is 0.6 mile south the project. The reference population was surveyed during the protocol rare plant survey, but none were found. In addition, the existing records noted the plants as being "scarce" and "needing fieldwork.
Southern curly-leaved monardella, *Monardella sinuata* ssp. *sinuata*	Coastal dunes, coastal scrub, chaparral, cismontane woodland. Sandy soils. 20–305 m. Blooming period: Apr–Sep.	CRPR 1B.2	Does not occur. No suitable habitat is present within the project area. All CNDDB occurrences are over 20 miles from the project area.
San Joaquin woollythreads, *Monolopia congdonii*	Chenopod scrub, valley and foothill grassland. Alkaline or loamy plains; sandy soils, often with grasses and within chenopod scrub. 55–840 m. Blooming period Feb–May.	FE, CRPR 1B.2	Does not occur. No suitable habitat is present within the project area. All CNDDB occurrences are over 20 miles from the project area.

Common Name Scientific Name	Habitat Description*	Species Status†	Potential to Occur
Gambel's yellowcress, *Nasturtium gambelii*	Marshes and swamps. Freshwater and brackish marshes at the margins of lakes and along streams, in or just above the water level. 5–305 m. Blooming period: Apr–Oct.	FE, ST, CRPR 1B.1	Does not occur. No suitable habitat is present within the project area. All CNDDB occurrences are over 20 miles from the project area.
Ojai navarretia, *Navarretia ojaiensis*	Chaparral, coastal scrub, valley and foothill grassland. Openings in shrublands or grasslands. 275–620 m. Blooming period: May–Jun.	CRPR 1B.1	Does not occur. No suitable habitat is present within the project area. All CNDDB occurrences are over 20 miles from the project area.
Hubby's phacelia, *Phacelia hubbyi*	Chaparral, coastal scrub, valley and foothill grassland. Gravelly, rocky areas and talus slopes. 0–1,000 m. Blooming period: Apr–Jun.	CRPR 4.2	**Occurs**. Species was observed during the protocol rare plant survey.
Mexican pleuridium moss, *Pleuridium mexicanum*	Chaparral. Sandstone. 440 m.	CRPR 2B.1	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is approximately 8.2 miles northwest of the project area.
Coastal sage scrub oak, *Quercus dumosa*	Closed-cone coniferous forest, chaparral, coastal scrub. Generally on sandy soils near the coast; sometimes on clay loam. 15–640 m. Blooming period: Feb–Mar.	CRPR 1B.1	**Occurs**. Species was documented within the project area.
Black-flowered figwort, *Scrophularia atrata*	Closed-cone coniferous forest, chaparral, coastal dunes, coastal scrub, riparian scrub. Sand, diatomaceous shales, and soils derived from other parent material; around swales and in sand dunes. 10–445 m. Blooming period: Mar–Jul.	CRPR 1B.2	**Absent**. Habitat is suitable within the project area; however, none were found during the protocol rare plant surveys. The nearest known occurrence is 0.6 mile west of the project area. However, CNDDB notes that occurrences east of Gaviota may be S. californica or a hybrid. S. californica was identified within the project area.
Estuary seablite, *Suaeda esteroa*	Marshes and swamps. Coastal salt marshes in clay, silt, and sand substrates. 0–80 m. Blooming period: Mar–Oct.	CRPR 1B.2	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is approximately 8.1 miles southwest of the project area.
Sonoran maiden fern, *Pelazoneuron puberulum* var. *sonorense*	Meadows and seeps. Along streams, seepage areas. 60–930 m. Blooming period: Jan–Sep.	CRPR 2B.2	**Absent**. Absent in the impact areas but present approximately 400 feet downstream.

Common Name Scientific Name	Habitat Description*	Species Status†	Potential to Occur
Santa Ynez false lupine, *Thermopsis macrophylla*	Chaparral. In open areas such as fuel breaks, after burns; on sandstone. 365–1,100 m. Blooming period: Apr–Jun.	SR, CRPR 1B.3	**Absent**. Habitat is suitable within the project area. However, none were found during the protocol rare plant survey. The nearest known occurrence is approximately 1.6 miles north of the project area.

*Habitat descriptions and occurrence location data are from CNDDB (CDFW 2020a). Blooming periods for plants are taken from CNPS (CNPS 2020).

†Status Key:

FE = Federally endangered.

SE = State endangered.

SR = State rare.

ST = State threatened.

California Rare Plant Ranks (CRPR):

1A = Presumed extirpated in California and either rare or extinct elsewhere.

1B = Rare, threatened, or endangered in California and elsewhere.

2B = Rare, threatened or endangered in California, but more common elsewhere.

4 = Limited distribution – watch list.

4.1 = Seriously threatened in California.

4.2 = Fairly threatened in California.

4.3 = Not very threatened in California.

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APPENDIX E

Wildlife Species Observed

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Table E-1. Wildlife Species Observed at Mission Creek

Scientific Name	Common Name
CLASS AMPHIBIA	**AMPHIBIANS**
SALAMANDRIDAE	**NEWTS**
*Taricha torosa**	Coast Range newt
HYLIDAE	**TREEFROGS**
Pseudacris cadaverina	California chorus frog
CLASS REPTILIA	**REPTILES**
PHRYNOSOMATIDAE	**ZEBRA-TAILED, EARLESS, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS**
Sceloporus occidentalis	western fence lizard
TEIIDAE	**WHIPTAIL LIZARDS**
Aspidoscelis tigris munda	California whiptail
COLUBRIDAE	**COLUBRID SNAKES**
Pituophis catenifer annectens	San Diego gopher snake
*Thamnophis hammondii**	two-striped garter snake
CLASS AVES	**BIRDS**
CATHARTIDAE	**NEW WORLD VULTURES**
Cathartes aura	turkey vulture
ACCIPITRIDAE	**HAWKS, KITES, AND EAGLES**
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
FALCONIDAE	**FALCONS**
Falco sparverius	American kestrel
ODONTOPHORIDAE	**NEW WORLD QUAIL**
Callipepla californica	California quail
Oreortyx pictus	mountain quail
COLUMBIDAE	**PIGEONS AND DOVES**
Patagioenas fasciata	band-tailed pigeon
Zenaida macroura	mourning dove
APODIDAE	**SWIFTS**
Aeronautes saxatalis	white-throated swift
TROCHILIDAE	**HUMMINGBIRDS**
Calypte anna	Anna's hummingbird

Scientific Name	Common Name
PICIDAE	**WOODPECKERS**
Colaptes auratus	northern flicker
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
TYRANNIDAE	**TYRANT FLYCATCHERS**
Empidonax difficilis	Pacific-slope flycatcher
Sayornis nigricans	black phoebe
Tyrannus vociferans	Cassin's kingbird
CORVIDAE	**JAYS AND CROWS**
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos	American crow
PARIDAE	**CHICKADEES AND TITMICE**
Baeolophus inornatus	oak titmouse
AEGITHALIDAE	**BUSHTITS**
Psaltriparus minimus	bushtit
TROGLODYTIDAE	**WRENS**
Catherpes mexicanus	canyon wren
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
SYLVIIDAE	**OLD WORLD WARBLERS**
Chamaea fasciata	wrentit
REGULIDAE	**KINGLETS**
Corthylio calendula	ruby-crowned kinglet
POLIOPTILIDAE	**GNATCATCHERS**
Polioptila caerulea	blue-gray gnatcatcher
TURDIDAE	**THRUSHES**
Catharus guttatus	hermit thrush
Turdus migratorius	American robin
MIMIDAE	**MOCKINGBIRDS AND THRASHERS**
Toxostoma redivivum	California thrasher
VIREONIDAE	**VIREOS**
Vireo gilvus	warbling vireo
Vireo huttoni	Hutton's vireo

Scientific Name	Common Name
PARULIDAE	**WOOD WARBLERS**
Oreothlypis celata	orange-crowned warbler
Oreothlypis ruficapilla	Nashville warbler
Setophaga coronata	yellow-rumped warbler
Setophaga townsendi	Townsend's warbler
Cardellina pusilla	Wilson's warbler
PASSERELLIDAE	**NEW WORLD SPARROWS**
Junco hyemalis	dark-eyed junco
Melospiza melodia	song sparrow
Passerella iliaca	fox sparrow
Melozone crissalis	California towhee
Pipilo maculatus	spotted towhee
Zonotrichia atricapilla	golden-crowned sparrow
Zonotrichia leucophrys	white-crowned sparrow
CLASS MAMMALIA	**MAMMALS**
SCIURIDAE	**SQUIRRELS**
Sciurus griseus	western gray squirrel
Tamias merriami	Merriam's chipmunk
GEOMYIDAE	**POCKET GOPHERS**
Thomomys bottae	Botta's pocket gopher
CERVIDAE	**DEER**
Odocoileus hemionus	mule deer

*Special-status wildlife species

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APPENDIX F

Special-Status Wildlife Detected or Potentially Occurring in the Study Area

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Table F-1. Potential Occurrence for Special-Status Wildlife within 5 Miles of the Project Area

Common Name *Scientific Name*	Habitat Description*	Species Status†	Potential to Occur
Obscure bumble bee *Bombus caliginosus*	Coastal areas from Santa Barbara County to north to the state of Washington. Food plant genera include *Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia*.	SA	Does not occur. Food plants are present within the project area. However, California Natural Diversity Database (CNDDB) occurrences are generally from the 1960's and over 4.25 miles from the project area.
Crotch bumble bee *Bombus crotchii*	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum*.	SC	Does not occur. Food plants are present within the project area. The nearest CNDDB occurrence is from 1971, approximately 1 mile southeast of the project area.
Globose dune beetle *Coelus globosus*	Inhabitant of coastal sand dune habitat; erratically distributed from Ten Mile Creek in Mendocino County south to Ensenada, Mexico. Inhabits foredunes and sand hummocks; it burrows beneath the sand surface and is most common beneath dune vegetation.	SA	Does not occur. No suitable habitat is present within the project area. The nearest occurrence is approximately 6.8 miles southwest of the project area.
Monarch – California overwintering population, *Danaus plexippus* pop. 1	Winter roost sites extend along the coast from north Mendocino to Baja California, Mexico. Roosts in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	FC	Does not occur. Winter roosting sites in Santa Barbara County are generally along the coastline. The nearest roosting site in CNDDB is 4 miles southeast of the project area.
Tidewater goby *Eucyclogobius newberryi*	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	FE, SSC	Does not occur. No suitable habitat is present within the project area. This species occurs along the coastline in brackish water.
Steelhead – southern California DPS, *Oncorhynchus mykiss irideus* pop. 10	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County). Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	FE	Does not occur. HELIX conducted a steelhead stream survey in April. The survey findings indicate that the project area lacks contiguous habitat to other pools and connectivity to the ocean.
Arroyo toad *Anaxyrus californicus*	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, desert wash, etc. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	FE, SSC	Does not occur. No suitable habitat is present within the project area. CNDDB occurrences are in the Santa Ynez River, approximately 5.25 miles northeast of the project area.

Common Name *Scientific Name*	Habitat Description*	Species Status†	Potential to Occur
California red-legged frog *Rana draytonii*	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11–20 weeks of permanent water for larval development. Must have access to estivation habitat.	FT, SSC	**Absent.** No suitable habitat is present in the project area. USFWS concurred with lack of suitable habitat.‡
Coast range newt *Taricha torosa*	Coastal drainages from Mendocino County to San Diego County. Lives in terrestrial habitats and will migrate over 1 km to breed in ponds, reservoirs and slow-moving streams.	SSC	**Occurs.** At least 15 individuals and 7 egg masses were observed during the steelhead trout survey downstream of Mission Creek Bridge on April 21, 2020.
Northern California legless lizard *Anniella pulchra*	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	SSC	Unlikely. Potentially suitable habitat may be present within the project area. Soil onsite is typically gravelly sandy clay loam. The nearest occurrences are approximately 2 miles south of the project area. Most other occurrences occur along the sandy coastline.
Coastal whiptail *Aspidoscelis tigris stejnegeri*	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland & riparian areas. Ground may be firm soil, sandy, or rocky.	SSC	Does not occur. The project area is outside of the known range for this subspecies. A California whiptail (*A. t munda*) was observed on-site by SCE's Felicia Nancarrow on July 21, 2020.
Western pond turtle / southwestern pond turtle *Actinemys marmorata / emys pallida*	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet in elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	SSC	**Likely**. Species is known to occur in suitable habitat in Santa Barbara County. However, nesting habitat is not present in the project area. None have been observed during the project surveys. Overwintering habitat is present downstream of the project area.
Coast (Blainville's) horned lizard *Phrynosoma blainvillii*	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	SSC	Unlikely. The roadways and trails provide suitable habitat for this species. However, the habitat is fragmented because of the steep slopes and dense brush. No anthills were observed during the field surveys.
Coast patch-nosed snake *Salvadora hexalepis virgultea*	Brushy or shrubby vegetation in coastal Southern California. Require small mammal burrows for refuge and overwintering sites.	SSC	Does not occur. No suitable habitat is present in the project area. Species is generally found in more arid, brushy habitats. Nearby CNDDB occurrences are from 1981 or older and are approximately 3 miles from the project area.

Common Name *Scientific Name*	Habitat Description*	Species Status†	Potential to Occur
Two-striped gartersnake *Thamnophis hammondii*	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 feet in elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	SSC	**Occurs**. Two individuals were observed during the steelhead trout survey downstream of Mission Creek Bridge on April 21, 2020.
Tricolored blackbird *Agelaius tricolor*	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	ST, SSC	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is 5 miles southwest of the project area.
Grasshopper sparrow *Ammodramus savannarum*	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.	SSC	Does not occur. No suitable habitat is present within the project area. The nearest CNDDB occurrence is 3.3 miles southwest of the project area.
Western snowy plover *Charadrius alexandrinus nivosus*	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	FT, SSC	Does not occur. No suitable habitat is present within the project area. Species generally occurs along the coastline. The nearest CNDDB occurrence is 4 miles south of the project area.
Yellow rail *Coturnicops noveboracensis*	Summer resident in the east Sierra Nevada in Mono County. Freshwater marshlands.	SSC	Does not occur. No suitable habitat is present within the project area. The only known CNDDB record for this species is from 1996, approximately 3 miles south of the project area.
White-tailed kite *Elanus leucurus*	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	FP	Does not occur. No suitable habitat is present in the project area. This species generally prefers open areas as opposed to the steep canyons and hills found in the project area. The nearest CNDDB occurrence is approximately 2.6 miles southwest of the project area.
Southwestern willow flycatcher *Empidonax traillii extimus*	Riparian woodlands in Southern California.	FE, SE	**Unlikely**. No suitable habitat is present within the project area. However, the nearest CNDDB occurrence is 4.9 miles north of the project area. In addition, the habitat at this occurrence is listed as cottonwood-willow riparian forest, which is not present in the project area.

Common Name *Scientific Name*	Habitat Description*	Species Status†	Potential to Occur
California black rail *Laterallus jamaicensis coturniculus*	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	ST, FP	Does not occur. No suitable habitat is present within the project area. The only known CNDDB record for this species is from 1917, approximately 3 miles south of the project area.
California brown pelican *Pelecanus occidentalis californicus*	Colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	FP	Does not occur. No suitable habitat is present within the project area. Species generally occurs along the coastline. The nearest CNDDB occurrence is 4 miles south of the project area.
California least tern *Sternula antillarum browni*	Nests along the coast from San Francisco Bay south to north Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	FE, SE, FP	Does not occur. No suitable habitat is present within the project area. Species generally occurs along the coastline. The nearest CNDDB occurrence is 4 miles south of the project area.
Least Bell's vireo *Vireo bellii pusillus*	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2,000 feet in elevation. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, baccharis, mesquite.	FE, SE	**Unlikely**. The project lacks the appropriate riparian vegetation for nesting least Bell's vireo. The riparian areas within the project area generally consists of oak woodland. The nearest CNDDB occurrence is from 1994, 3.9 miles west of the project area. Casual fall migrant along the coast, not known to nest along the south coast. There is potential for fall migrants to transit through the project area.
Ring-tailed cat *Bassariscus astutus*	Occurs in riparian habitats and in brush stands of most forest and shrub habitats at low to middle elevations. Requires hollow trees, logs, snags, cavities in talus and other rocky areas for cover. Usually found not more than 0.6 mile from permanent water. Nocturnal.	FP	**Unlikely**. Suitable habitat is present within the project area. CNDDB does not maintain records for this species. Data from studies conducted on this species in 1980 indicate that the population is relatively low. Publicly available online resources, such as iNaturalist, show no records within Santa Barbara County.
Townsend's big-eared bat *Corynorhinus townsendii*	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	SSC	Does not occur. There are no suitable roosting sites in the impact areas. In addition, the project area is a heavily trafficked hiking trail. The nearest CNDDB occurrence is from 1985, approximately 1.65 miles southwest of the project area.

Common Name *Scientific Name*	Habitat Description*	Species Status†	Potential to Occur
Big free-tailed bat *Nyctinomops macrotis*	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	SSC	Does not occur. There is no suitable habitat or suitable roosting sites in the project area. The nearest CNDDB occurrence is from 1996, approximately 3.5 miles south of the project area.

*Habitat descriptions and occurrence location data are from CNDDB (CDFW 2020a).

†**Status Key:**

FE = Federally endangered.
FT = Federally threatened.
FC = Candidate for federal listing.
FP = California fully protected.
SA = CNDDB-designated special animal.
SC = Candidate for state listing.
SE = State endangered.
ST = State threatened.
SSC = California special concern species.

‡ Personal communication, Francesca Massarotto, SWCA, with Dou-Shuan Yang, USFWS, ca. 2020

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APPENDIX G

Mission Creek Fisheries Assessment

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HELIX Environmental Planning, Inc.
11 Natoma Street, Suite 155
Folsom, CA 95630
916.365.8700 tel
619.462.0552 fax
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November 3, 2021

Jenny McGee – Project Manager
Southern California Edison Company
2244 Walnut Grove Avenue
Rosemond, CA 91770

Subject: Mission Creek Fisheries Assessment

Dear Jenny McGee:

HELIX Environmental Planning, Inc. (HELIX) presents this summary report of the current distribution and abundance of Southern California Steelhead (*Oncorhynchus mykiss*) and residential rainbow trout (*O. mykiss*) in Mission Creek, including instream habitat conditions and deposition of sidecast sediments into those instream habitats from their introduction into Mission Creek watershed during road improvement operations. In December 2019, Southern California Edison (SCE) conducted road widening activities along Spyglass Ridge Road in Mission Canyon which resulted in the deposit of sediments, including fine sediments, cobbles and boulders, into Mission Creek. The primary purpose of this report is to provide an assessment of potential project-related effects to juvenile resident trout from the introduction of sidecast sediments, especially within the stream section of direct sidecast material deposition (project area), including Road Area 1 Outliers, and in Creek Site 1 to Creek Site 4 (Figures 1 through 4).

BACKGROUND INFORMATION

Information relative to Southern California Steelhead distribution and abundance in Mission Creek, both historic and current, is generally lacking. The most comprehensive description of fish populations and their habitats in Mission Creek is provided in *Steelhead Assessment and Recovery Opportunities in Southern Santa Barbara County, California* (Stoecker and Conception Coast Project 2002), hereafter referred to as Stoecker 2002. Stoecker conducted extensive ground and snorkel surveys in Santa Barbara streams, including Mission Creek, to determine fish abundance and distribution, especially for the rearing Southern California steelhead and residential rainbow trout, during two seasons (2001 and 2002). Stoecker reported that no fish were observed in Mission Creek upstream from the confluence with Rattlesnake Creek during both survey years. Stoecker further remarked that the steelhead population had likely been extirpated from upper Mission Creek, at least partially due to the presence of the impassable barrier on Mission Creek just upstream from the confluence with Rattlesnake Creek.

City of Santa Barbara Creeks Division reports on their website that over the past decade, Southern California steelhead have sometimes been observed attempting to migrate and spawn within the lower section of Mission Creek. However, they are unable to migrate upstream and spawn due to barriers within the creek channel. Creeks Division estimates that there are 12 significant anthropogenic (artificially-made) barriers to steelhead migration in Mission Creek.

California Department of Fish and Wildlife (CDFW) Fish Passage Priorities lists (2018 and 2019), which are the top fish passage restoration priorities of the Department, statewide, list two major passage barriers in Mission Creek that require immediate improvements to allow upstream access by migrating steelhead: Mission Canyon Road Bridge and Highway 192 Bridge. The following criteria are considered for inclusion to the list: (1) high likelihood to improve migration for anadromous species; (2) availability of recent fish and habitat data; (3) willing partners and land access; (4) known political support at a local, state or national level; (5) if the site is a barrier to a federal recovery plan "core" population; (6) if the watercourse is an eco-regional significant watershed; 7) if the Department is committed to monitoring before, during and after any barrier improvement project is undertaken; and 8) if the site is considered a keystone barrier.

MISSION CREEK HABITAT SURVEYS

To better understand current fish occupation in Mission Creek, habitat conditions that may affect fish distribution and abundance in Mission Creek, and potential effects to the stream channel and fish habitat from the introduction of sidecast sediments, HELIX fishery biologists conducted two habitat surveys in 2020, beginning from the Old Mission Dam and extending upstream through the project area. A more focused survey included areas surrounding the Road Area 1 Outliers in 2021. In all surveys, the habitat mapping survey focused on pool habitats, from which a series of fluvial geomorphological measurements were collected within the 1,864-meter reach (Attachment A). The goal of this survey was to measure the length, width, and depth of all wetted areas within each pool habitat unit, to evaluate the percentage of substrate types (silt, sand, gravel, cobble, boulder, bedrock) within each habitat, and to determine depths of newly deposited substrates (especially fine sediments, i.e., sand and gravels). Additional goals and project details can be found in Attachment A.

The results of the current surveys, as well as past surveys (i.e., Stoecker 2002), indicate that under current conditions, there are several important (and complete) barriers to steelhead passage in Mission Creek, especially the Old Mission Dam with an approximate 10-foot vertical drop to the downstream plunge pool. Upstream of Old Mission Dam and below the Tunnel Road Bridge, there are at least three barriers that most likely are also complete barriers to upstream passage, including the concrete-encased culvert/debris basin and several cascades and falls. No fish were observed during either survey, though the surveys were conducted on foot; no underwater surveys were performed. All potential effects to the stream channel from the introduction of sidecast sediments were noted. All pools and observations were photo-documented, and their GPS coordinates were collected (Attachment A).

FINDINGS

Our current findings corroborate those of Stoecker (2002), in that no fish were observed in Mission Creek upstream from the confluence with Rattlesnake Creek, and that the steelhead population had likely been extirpated from upper Mission Creek, due primarily to the presence of the impassable barrier on Mission Creek just upstream from the confluence with Rattlesnake Creek. That barrier was recently

observed during the current surveys by the HELIX biologists, who also concluded it was impassable to upstream migrating fish.

There has been at least one anecdotal report from a local resident (source and date unknown, pers. comm. CDFW) of residential rainbow trout being present in one pool about halfway from Old Mission Dam to Tunnel Road Bridge. CDFW reported two independent sightings of resident rainbow trout (the initial sighting was indicated to be seven inches), in a pool in the same general location (CDFW 2021), during a Coastal Monitoring Project survey of Mission Creek conducted in July 2021. Taken together, these observations indicate the potential presence of fish rearing habitat in Mission Creek, in particular within a limited number of pools with suitable water depth (preferably three feet and deeper) and containing complex habitat and cover. A few such habitats were documented during the HELIX habitat survey (Attachment A). Such pools may also exist within and upstream of the current project site. However, during our surveys, the stream channel in that portion of Mission Creek was dry. Foot surveys conducted this year indicated the same, largely dry conditions. Since fish have been reported to occur in one or two pools in Mission Creek, it may be possible that fish were present in pool habitat within the project area during the introduction of sidecast sediments. However, the general absence of fish from potentially suitable rearing pools immediately downstream of the project area precludes the likelihood of fish being present within the project area at that time. Furthermore, the general absence of fish throughout Mission Creek, at least upstream from Rattlesnake Creek confluence, other than potentially one or two fish from a single pool, further precludes the likelihood of fish being present in the project area.

Further, the HELIX surveys also documented the general paucity of spawning habitat throughout Mission Creek. Few riffles with suitable spawning gravels were observed. Steelhead are known for their ability to spawn in patchy gravel substrate, but that type of habitat is also limited. These observations, along with the absence of yearling (young-of-the-year) fish, indicate the lack of spawning activity in this portion of Mission Creek.

2008 STEELHEAD OBSERVATIONS

The last documented spawning activity of steelhead in Mission Creek was reported between February 14 and 17, 2008; about 17 adult steelhead were observed and photo-documented in a series of memos by Mark Capelli (NOAA Fisheries South-Central/Southern California Steelhead Recovery Coordinator) in Mission Creek about 0.75 mile upstream of the Mission Creek estuary and in the area of the Bath Street and Cota Street bridge crossings. Notes from the memos are summarized below:

- February 14, 2008 - A single adult steelhead was observed constructing a redd in lower Mission Creek below Ortega Street Bridge (approximately 0.75 mile upstream from the Mission Creek Estuary). The fish was accompanied by a smaller male.

- February 15, 2008 - A single adult steelhead was observed over a redd in lower Mission Creek below Ortega Street Bridge. The fish was considerably smaller than a typical winter run steelhead, though it exhibited typical spawning coloration.

- February 16, 2008 - Two adult steelhead were observed over a redd in lower Mission Creek below Ortega Street Bridge. The female fish was approximately 30 inches in total length. From its coloration, it appeared to have been in freshwater for at least several weeks. The smaller

male (approximately 12 inches in total length) exhibited spawning coloration along the lateral line and operculum.

- February 17, 2008 - Approximately 10 adult steelhead were observed in a pool under the Bath Street Bridge (approximately 25 inches in total length) with limited up or downstream movement due to low water. Two additional steelhead (approximately 30 inches in total length) were observed below the Bath Street Bridge in a shallow riffle area. Shortly after the observation, a small storm elevated the stream flow, briefly creating a small passage opportunity for the fish to emigrate back to the ocean. No fish were observed during an examination of the pool and the reach of Mission Creek to the estuary following the storm event.

- February 19, 2008 – one adult steelhead was observed in a shallow pool above the Bath Street bridge.

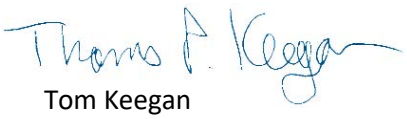
- February 21, 2008 – one adult steelhead was observed below the Cota Street bridge.

On April 22, 2020, the HELIX biologists revisited this reach where Capelli observed spawning activity. The reach was largely dry except for a very large pool (over five feet in depth) upstream of the Delagura Street Bridge. Substrates in this pool were anoxic. The survey was conducted to examine instream habitat in the lower section of Mission Creek between the Cota Street and Castille Street bridges. Suitable spawning habitat is available under the Cota Street and Bath Street bridges with ample cobble/gravel substrates. The downstream area from Castillo Street had cobble/gravel /small boulder substrates like areas downstream between the Cota Street and Bath Street bridges. Upstream of the Castillo Street bridge, the channel becomes fully concrete-lined, including the bottom. This partially explains why steelhead were only observed within the two- to three-block area from the Cota Street to Ortega Street crossings in 2008. Fish were unable to pass upstream at this flow level, due to the flat concrete bottom. Further, suitable spawning gravels were present below the concrete channel allowing for the documented spawning activity. Moreover, between 2003 and 2010, steelhead were sometimes observed attempting to migrate or spawn within this reach of Mission Creek and could not pass upstream because of the presence of upstream passage barriers (City of Santa Barbara, Parks and Recreation Commission Report, May 26, 2010).

CONCLUSION

If you have any questions regarding the information presented in this letter report, please contact me at (619) 462-1515.

Sincerely,



Tom Keegan
Senior Fisheries Scientist

Attachments:

Attachment A: Sidecast Sedimentation and Aquatic Habitat Surveys in Mission Creek

REFERENCES

California Department of Fish and Wildlife (CDFW). 2021. Mission Creek *O. mykiss* Monitoring 2021. Letter to Mary Larson, Environmental Scientist Supervisor, Department of Fish and Wildlife. October 7. Unpublished.

Santa Barbara, City of. May 26, 2010. Park and Recreation Commission Report: Mission Creek Restoration and Fish Passage Project at the Tallant Road Bridge . Available at: https://www.santabarbaraca.gov/SBdocuments/Advisory_Groups/Park_and_Recreation_Commissions/Archive/2010_Archives/03_Staff_Reports/K2010-05-26_05_26_2010_Item_5_Mission_Creek_Restoration_Fish_Passage_Project.pdf.

Stoecker, M. 2002. Steelhead Assessment and Recovery Opportunities in Southern Santa Barbara. County, California. Conception Coast Project, Santa Barbara, CA. Available at: https://www.conceptioncoast.org/all_steelhead_report_final2002-06-21.pdf.

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HELIX Environmental Planning

Mission Creek Restoration

Sidecast Sedimentation and Aquatic Habitat Surveys in Mission Creek

November 2021 | 01606.00001.024

Prepared for:

Southern California Edison

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

Prepared by:

HELIX Environmental Planning, Inc.
11 Natoma Street, Suite 150
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Mission Creek Restoration

Sidecast Sedimentation and Aquatic Habitat Surveys in Mission Creek

Prepared for:

Southern California Edison Company
2244 Walnut Grove Avenue
Rosemond, CA 91770

Prepared by:

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11 Natoma Street, Suite 150
Folsom, CA 95630

November 2021 | 01606.00001.024

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TABLE OF CONTENTS

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

HELIX	HELIX Environmental Planning, Inc.
m	meters
SCE	Southern California Edison
UPRR	Union Pacific Railroad

1.0 INTRODUCTION

HELIX Environmental Planning, Inc. (HELIX) presents this summary report of 'baseline' (i.e., at the time of the survey) habitat mapping conditions and deposition of sidecast sediments in Mission Creek during site surveys on August 25 and 26, 2020. In December 2019, Southern California Edison (SCE) conducted road widening activities along Spyglass Ridge Road in Mission Canyon, which resulted in the deposit of sediments, including fine sediments, cobbles and boulders into Mission Creek. The primary purpose of this report is to provide habitat-based depositional sediment data (from the December 2019 incident) from which to compare future Mission Creek depositional sediment data within affected channel habitat that may affect adult and juvenile Southern California steelhead (*Oncorhynchus mykiss*) and resident rainbow trout (*O. mykiss*) passage.

1.1 PART 1 - HABITAT MAPPING AND SEDIMENT DEPOSITION DOWNSTREAM FROM THE SIDECAST MATERIALS SITE

HELIX biologists and habitat specialists, Patrick Martin and Brianna Ordung, conducted a habitat mapping stream survey in Mission Creek on August 25 and 26, 2020, along approximately 1,864 meters (m) (6,115 feet) extending from the Old Mission Dam at the Santa Barbara Botanical Gardens (see Appendix 1, Table 1, *Summary of Habitat Mapping Effort in Mission Creek from the Old Mission Dam Upstream to Creek Site Area 1 on August 25 and 26, 2020*, and Appendix 2, Figure 1, *Overview*) upstream to the top of Creek Site 1, the upstream-most area of sidecast material deposition within Mission Creek. There are three sub-reaches within this survey reach; *Sub-reach a*) the stream section of direct sidecast material deposition (project area) from Creek Site 1 to Creek Site 4 (Appendix 2, Figure 2, *Sidecast Deposits - Sub-reach A*); *Sub-reach b*) the stream section downstream from Creek Site 4 to Road Area 2 (Appendix 2, Figure 3, *Sidecast Deposits - Sub-reach B*), where sidecast materials were transported to the edge of Mission Creek through a small gully (SC3), and *Sub-reach c*) the stream section downstream from Road Area 2 to the Old Mission Dam (Appendix 2, Figure 4, *Sidecast Deposits - Sub-reach C*).

All habitat units encountered were identified to type and measured as to length (Appendix 1, Table 1). A habitat unit (stream channel geomorphic unit) is a generally homogeneous length of stream that is classified by channel bed form, flow characteristics, and water surface slope. The California Department of Fish and Game (now Wildlife) Salmonid Habitat Restoration Manual (1998) provides habitat unit typing protocols to distinguish stream habitats as one of 22 types, e.g., pool, riffle, and run. Appendix 1, Table 2 provides a list of the aquatic habitat types, and their acronyms used in the tables, that were found in Mission Creek. Habitat typing and mapping is a hierarchical system of aquatic habitat classification that allows for a stream to be analyzed as an assemblage of habitat types.

Habitat typing provides tools for analysis of habitat diversity and suitability for steelhead. When a disturbance to a stream occurs that involves sediment input and transport (e.g., erosion, sidecast input), pool habitats can be diminished by sediment aggradation (deposition), and spawning gravels may become embedded. Good steelhead habitat is often characterized by a diversity of pools, including lateral scour pools and those formed by large woody debris. A stream reach is often rated as high-quality habitat if it contains more than 30 percent of pools by length, in addition to other high-ranking values.

For the reasons discussed above, the habitat mapping survey focused on pool habitats, from which a series of fluvial geomorphological measurements were collected within the 1,864-m reach (Appendix 1,

Table 3). The goal of this survey was to measure the length, width, and depth of all wetted areas within each pool habitat unit as described above, to evaluate the percentage of substrate types (silt, sand, gravel, cobble, boulder, bedrock) within each habitat, to determine depths of newly deposited substrates (especially fine sediments, i.e., sand and gravels), and to collect biological survey data as to the presence of fish, two striped garter snake, coast range newt, and Western pond turtle. This survey is considered a baseline survey as to the current presence (type and quantity) of sidecast sediments within habitat units, prior to the onset of fall/winter storms later in 2020 and early 2021. All tables and figures for this report are presented in Appendices 1 and 2. Representative photos from the survey are included in Appendix 3.

The depth of deposited sediments was determined from a series of measurements collected within each pool habitat (Appendix 1, Table 4). Depositional data were collected only from pool habitats (discussed above). Channel bankfull (two-year storm event) was also determined, and pool depths were measured as to that point. Bankfull height was used as a depth measurement for pools because Mission Creek was dry in many locations during the August surveys. It was also used in pools that were too deep to measure safely and accurately. This measurement will be used as a baseline for which to compare future sediment depositional data. Bankfull height was determined using identifying characteristics such as water lines, changes in sediment composition, and locations of permanent vegetation and was estimated by line of sight and by running a leveled measure tape to a stadia rod. The HELIX biologists discussed bankfull height locations and reached a mutual decision before recording the data. All data have been fully tabulated by geo-referenced habitat unit for comparison to potential future surveys.

Habitat Survey Results

A total of 130 habitat units from the Old Mission Dam to the top of Creek Site 1 were identified during the habitat mapping survey (Appendix 1, Table 1; Appendix 2, Figure 1), of which 121 habitat units were identified in sub-reaches b and c below the project area (sub-reach a) that includes the sidecast sediment input sites (Creek Site 1, Creek Site 2, Creek Site 3, and Creek Site 4). Nine habitat units were identified within sub-reach a from habitat unit 122 through habitat unit 130. Due to the heavy deposition of sidecast sediments in sub-reach a, individual habitat units were sometimes covered.

Heavy deposition of sidecast sediments within sub-reach a has modified the streambed and may affect the natural streamflows in Mission Creek. Creek sites 1, 2, and 3 have the more noticeable impacts to the stream from sediment deposition. Habitat unit 122 appeared to be a cascade habitat but was approximately 80 percent covered by large sidecast boulders from Creek Site 1. The run habitat of unit 123 had a buildup of mostly fine sidecast sediments and cobbles from Creek Site 2 in the center of the streambed that has created a split channel habitat. Habitat unit 124 is a long (56 m), low gradient riffle habitat impacted by boulders from Creek Site 3 that have formed a five-foot dam within habitat unit 124, creating two Sidecast Sediment Dammed Pools (SSDP) - habitat units 125 and 126 (Appendix 3, Photos 15 and 16), that will impound streamflow. These sediments could be transported downstream with a heavy rain or flood event and may alter the streamflow and habitat types throughout Mission Creek. All photos can be found in Appendix 3.

During the habitat mapping survey, sidecast sediments appeared to be deposited intermittently in some habitats downstream from the points of sidecast entry, and HELIX biologists qualitatively evaluated field conditions at each of these areas to make their best conclusion on whether they were of sidecast origin or part of typical sediment transport/deposition within the creek. Sidecast sediments were identified as being of sidecast origin because of their color, appeared to be less impacted and weathered than

surrounding sediments, were similar in appearance to the sediments that were observed in sub reach a (i.e., immediate vicinity of sidecast sediment input), and were loosely deposited on top of bedrock sheets, along the edges of boulders, bases of steps or cascades, outer edges of pools, and sometimes as a thin layer over previously deposited fine sediments.

Deposited sidecast sediments were determined to be present in twelve habitat units in sub-reaches b and c, located downstream from sub-reach a (including the four sidecast sediment input sites, Creek Sites 1 through 4); seven sites (habitat units) with sidecast sediment deposition are located in sub-reach b (Appendix 2, Figure 3; Appendix 1, Table 4), while five sites are located in sub-reach c, the lower gradient section just upstream of Old Mission Dam (Appendix 2, Figure 4; Appendix 1, Table 4). The downstream-most site in sub-reach b with deposited sidecast sediments was adjacent to the lowest sidecast sediment input site at Road Area 2; habitat unit number 65 (run) (Appendix 2, Figure 3; Appendix 1, Table 4).

In sub-reach b, seven habitat units with deposited sidecast sediments included unit numbers 65 (step run), 92 (run), 105 (low gradient riffle), 110 (scour pool bedrock formed), 115 (plunge pool), 117 (scour pool bedrock formed), and 120 (plunge pool). Habitat unit number 65 (adjacent to Road Area 2) had sidecast boulders along the right bank and scattered in the streambed. However, the gulley adjacent to this site (SC3) that leads directly from the Road Area 2 input site to Mission Creek has substantial deposits of sidecast sediments.

In sub-reach c, five habitat units with light deposition of sidecast sediments were identified, including habitat unit numbers 2 (low-gradient riffle just above Mission Dam), 3 (scour pool boulder formed), 6 (scour pool boulder formed), 9 (scour pool boulder formed) and 12 (scour pool boulder formed). The very low gradient character of this portion of the creek is likely why fine sediments were deposited in these units.

Deposited sidecast sediments in these twelve habitat units were characterized as consisting of sands and gravels exclusively, and generally ranged from between two and five inches of deposited sediments at their deepest deposition point. Habitat unit 115 had 24 inches of fine sediment with an overlay of a thinner layer of deposited sidecast sediment up to two inches in depth (Appendix 1, Table 4). This unit is a large plunge pool located below the highest waterfall (Tunnel Road Bridge falls), which was over 10 feet in height.

Substrate composition percentages by size (i.e., sand, gravel, cobble, boulder, and bedrock) for each pool habitat are presented in Appendix 1, Table 4 (pool habitats only). Because only a limited amount of sidecast sediments appear to have been transported downstream during the higher flow events that occurred after the sidecast input occurred in December 2019, and the sidecast origin sediments were generally deposited over previously deposited fine sediments and over limited areal extent within the affected habitat units, significant adverse effects to the aquatic habitat resulting from sediment deposition were not apparent. The embeddedness of larger sediments was not apparent.

1.1.1 Cross-section Transects

In anticipation of Mission Creek restoration planning and subsequent removal or relocation of deposited sidecast sediments, more detailed information regarding the amounts and locations of the largest stream deposits is necessary. Four locations of heavy sediment deposition were identified where cross-section transects could be measured by a surveyor to describe sidecast sediment input to the

Mission Creek channel (Appendix 2, Figure 1). The transects are numbered as transects 1, 2, 3, and 4 and are located within sub-reach a (Creek Sites 1 through 4), and photos showing the transect locations are presented in Appendix 3.

1.1.2 Initial Creek Restoration Planning

Habitat restoration efforts within Mission Creek will be informed by the results of this survey and the existing conditions in the adjacent portions of the creek. It is clear from our habitat mapping efforts that Mission Creek contains varied and complex habitats with varied gradients, and the habitat restoration approach within the creek will include a focus on maintaining this variation and complexity, especially since it will offer multi-species benefits. Gradients in the creek ranged from one percent in low gradient riffles and other flatwater habitats, which are important to two-striped garter snake, two to three percent in step pool and step run habitats, which are important to Western pond turtle, and seven to 16 percent gradients in cascades and falls, with associated plunge pool habitats potentially important for rearing juvenile and adult salmonids and other fish species, as well as California newt habitat. There is generally limited room for creek channel realignment in and around areas of heavy sediment deposition; however, the cross channel transect surveys will be useful in evaluating this option.

HELIX biologists visually assessed potential ingress and egress sites for heavy equipment, which may be necessary for complete sidecast material removal from the canyon floor and the reconstruction of in-stream habitat. In general, the upper Mission Creek is a high gradient with a V-shaped canyon. Potential access roads are located well above the channel, precluding the ability to construct roadways that would allow access to the channel, unless sensitive habitats are affected by the grading and require the need for an access road. If a roadway was able to be constructed to the channel in any location, machinery would not be able to move upstream or downstream due to high gradient falls and cascades. It appears that cleanup actions, whether they include material removal, material relocation, or in-place stabilization, would at least include hand crews, longlines with hand-loaded buckets working from above from the existing roadways, or possibly aerial support (e.g., helicopter) if tree canopy and incised canyons allow for this option.

2.0 REFERENCES

California Department of Fish and Game. 1998. California Salmonid Stream Habitat Restoration Manual. Third Edition. Inland Fisheries Division. California Department of Fish and Game. Sacramento, CA. 495 pp.

Stoecker, M. 2002. Steelhead Assessment and Recovery Opportunities in Southern Santa Barbara County, California. Conception Coast Project, Santa Barbara, CA. https://www.conceptioncoast.org/all_steelhead_report_final2002-06-21.pdf

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Appendix 1

Tables

Appendix 1
Tables

Table 1
SUMMARY OF HABITAT MAPPING EFFORT IN MISSION CREEK FROM THE OLD MISSION DAM UPSTREAM TO CREEK SITE AREA 1 ON AUGUST 25 AND 26, 2020

Unit #	Level IV Habitat Type	Length (m)	Species	Comments
Sub-reach c				
1	DAM	2.0		Mission Dam; approx. 10 ft from opening to pool
2	LGR	54.5		Light interspersed deposit of fine sidecast
3	SPBo	5.5		Light interspersed deposit of fine sidecast
4	SRN	44.0		
5	LGR	16.0		
6	SPBo	8.0		Light interspersed deposit of fine sidecast
7	RUN	13.0		
8	STP	15.3		
9	SPBo	8.0		Light deposit of sidecast sediment on L and R edges of pool
10	STP	43.5		
11	RUN	23.5		Beginning of water in creek
12	SPBo	3.8		Rocks stacked at U/S and D/S edge of pool appear to be manmade, Lots of rock stacking and alterations just D/S of pool along R edge. Light interspersed deposit of fine sidecast.
13	SRN	36.5		
14	STP	21.0		
15	RUN	12.0		
16	HGR	11.6		
17	SPBo	4.0		
18	SRN	30.5		
19	CSC	13.5		
20	PLP	8.0		Murky, dirty water; Hard to see sediment sizes, depths taken from safe location near L edge, Large culvert U/S of pool approx. 6 ft. above current water level, still some dripping into pool
21	CUL	21.5		No water above culvert
22	RUN	38.5		
23	STP	26.0		Water in creek
24	CSC	19		
25	STP	19.5		
26	PLP	6.0		Mudrock waterfall into pool approx. 7 ft. high, still had a slow trickle of water
27	RUN	17.5		
28	LGR	10.5		
29	SPBo	6.0		
30	LGR	1.8		

Appendix 1 (cont.)
Tables

Unit #	Level IV Habitat Type	Length (m)	Species	Comments
Sub-reach c-cont.				
31	STP	10.0		
32	PLP Dam	5.5		Natural bedrock under manmade dam U/S of pool approx. 6.5 ft. high
33	LGR	8.0		
34	SPBk	7.0		
35	LGR	28.5		
36	SPBk	7.5		
37	RUN	19.5	*T. torosa*	
38	HGR	4.1		
39	PLP	10.0	*T. torosa*	Notched undercut bank narrow rectangle on U/S end, Bedrock wall approx. 15 ft. high from bottom of pool
40	STP	10.5		
41	LGR	9.0		
42	SPBk	7.5		
43	HGR	9		
44	PLP	3.2		5.5 ft. high bedrock wall on U/S end
45	SPBk	9		Series of small pools scoured out by bedrock, almost trench pool like
46	LGR	14		
47	PLP	6		Large boulders U/S create approx. 7 ft. drop into pool
48	STP	19		
49	SPBo	7		
50	SRN	29		
51	HGR	6		
52	CSC	2.3		
53	RUN	10.5		
54	LGR	10.5		
55	HGR	13.5		
56	RUN	4.5		
57	PLP	6	*T. torosa*	4 ft. drop from U/S bedrock
58	BRS	6.5		
59	HGR	12		
60	TRP	11.5		Long narrow channel w/ bedrock wall to L side, D/S L edge looks like it may eddy out but not confident it would be calm enough as a pool habitat with higher water levels given gradient D/S. Very large boulder U/S approx. 10 ft. tall, water appears to run under and over
61	CSC	7.5		
62	RUN	6		
63	HGR	5.5		

Appendix 1 (cont.)
Tables

Unit #	Level IV Habitat Type	Length (m)	Species	Comments
Sub-reach c- cont.				
64	LGR	12		
***Sub-reach b*- Road Area 2**				
65	SRN	22.5		Sidecast boulders on R bank and scattered in the stream bed
66	BRS	5		
67	RUN	9		
68	LSP	5.5		
69	CSC	4.5		
70	PLP	5	*T. torosa*	
71	HGR	4.5		
72	RUN	2.3		
73	CSC	8.5		
74	STP	42		
75	BRS	16.5		Plunging approx. 4 ft. into bedrock, some small refugia under giant boulders
76	CSC	5		
77	BRS	8		
78	CSC	13		
79	STP	29		
80	HGR	2.1		
81	MCP	10.5		Very long pool, bedrock on R side, small logs creating scoured refugia throughout
82	CSC	8.5		Water dried up and started again at U/S end
83	RUN	35		
84	PLP	11.5		Approx. 20 ft. drop from boulders U/S with steady trickle into pool
85	LGR	41		
86	PLP/MCP	8		5.5 ft. drop from boulders U/S, Bedrock on either side of deepest spot, deepest spot more towards the middle not as close to the plunging water
87	STP	12.5		
88	RUN	19.5		
89	LGR	36		
90	CSC	24.5		
91	STP	13		
92	RUN	17.5		Light deposit of sidecast sediment at U/S end piled up after boulder plunge
93	HGR	4		
94	SRN	49		
95	CSC	13.5		

Appendix 1 (cont.)
Tables

Unit #	Level IV Habitat Type	Length (m)	Species	Comments
Sub-reach b- cont.				
96	PLP/SPBk	6		Approx. 25 ft. high bedrock waterfall at U/S end
97	CSC	14		
98	RUN	11.5		
99	STP	39	*T. hamondii*	Step pools on both sides of boulders creating a split channel approx. 12.5 m long
100	SPBo	7		
101	STP	21.5		No water
102	RUN	7		
103	STP	26.5		Water
104	SRN	53		No water towards U/S end
105	LGR	17		17 m U/S from end there is a large woody debris pile on L side of channel that is starting to form a plunge pool
106	STP	17		
107	CSC	8		
108	SPBo	8		
109	LGR	8		
110	SPBk	7.5		Slight deposit of sidecast sediments on D/S and L edge of pool
111	BRS	2		
112	CSC	14		
113	RUN	8.5		
114	CSC	13.5		
115	PLP	10.5		Approx. 15 ft. drop from bedrock and boulders U/S, small cave under boulders on U/S end, deep sediment layer of native origin.
116	RUN	8.0		Waterfall D/S approx. 15 ft drop
117	SPBk	11.5		
118	PLP	6.0		2 ft drop from run U/S
119	RUN	2.6		
120	PLP	10.0		7 ft drop into pool from boulders U/S, longer pool with small tree creating a second scour area towards D/S end, newer gravels and sand covering most of pool bottom
Sub-reach a- **Creek Site Area 1**				
121	SRN	34.0		Evidence of light sidecast sediments
122	CSC	9.0		Sidecast gravel, cobble, and large boulders with potential for more to enter creek from slide on the R side above the bank, approx. 12 ft. deep made up of fines, gravels, cobbles, and small to large boulders. **Location of transect 1 (34.46917397N, 119.7066531W) and transect 2 (34.46932053N, 119.706706W)**
123	RUN	11.0		Finer sidecast appeared to have built up in the middle of the channel towards the D/S end causing it to split into two channels sidecast alongside approx. 5 ft. deep made of sands, gravels and small cobbles. **Location of transect 3 (34.46944569N, 119.7068503W)**

Appendix 1 (cont.)
Tables

Unit #	Level IV Habitat Type	Length (m)	Species	Comments
***Sub-reach a*- Creek Site Area 2**				
124	LGR	56.0		Sidecast made up of fines, gravels, cobbles and some smaller boulders. **Location of transect 4 (34.46975284N, 119.7072644W)**
***Sub-reach a*- Creek Site Area 3**				
125	*SSDP	7.0		Sidecast made up of fines and gravels built up at D/S edge creating a pool
126	*SSDP	6.0		Large sidecast boulders appear to have created a 5 ft. dam U/S resulting in a PLP D/S, approx. 1 ft. of sidecast along R bank that could enter stream at a rain event
127	PLP	14.0		7 ft. Waterfall U/S drop into pool along slightly sloping bedrock wall, Sidecast along L and R banks and D/S dam-like structure approx. 5 ft high
***Sub-reach a*- Creek Site Area 4**				
128	PLP	5.5		Canopy cover from bridge, sidecast made up of fines, gravels, cobbles and small boulders, fines building u at D/S edge of pool and around sides
129	STP	18.5		Sidecast made up of mostly fine and gravel, some cobble sized and scattered larger boulders
130	BRS	7.0		Sidecast made up of fines and gravel with a few small boulders

*SSDP = Sidecast Sediment Dammed Pool

Appendix 1 (cont.)
Tables

Table 2
LEVEL III AND IV HABITAT MAPPING ACRONYM KEY

Acronym	Level IV Habitat Type	Level III Habitat Type
LGR	Low Gradient Riffle	Riffle
HGR	High Gradient Riffle	Riffle
CSC	Cascade	Cascade
BRS	Bedrock Sheet	Cascade
RUN	Run	Flatwater
SRN	Step Run	Flatwater
TRP	Trench Pool	Main Channel Pool
MCP	Mid-Channel Pool	Main Channel Pool
STP	Step Pool	Main Channel Pool
SPBk	Lateral Scour Pool - Bedrock formed	Scour Pool
SPBo	Lateral Scour Pool - Boulder Formed	Scour Pool
PLP	Plunge Pool	Scour Pool
CUL	Culvert	Additional Designations
SSDP	Side Sediment Dammed Pool	Created to Describe for Project
SPConF	Scour Pool Concrete Formed	Created to Describe for Project

Appendix 1 (cont.)
Tables

Table 3
DETAIL OF ALL POOL HABITAT DIMENSIONS, SUBSTRATE COMPOSITIONS, AND INSTREAM COVER IN MISSION CREEK ON AUGUST 25 AND 26, 2020

Unit #	Level IV Habitat Type	Pool Dimensions						Substrate Comp (%) *Sidecast sediment origin (%)*					Instream cover (% of total cover)				
		Length (m)	Max Width (m)	Max Depth (ft) Bank-full	Max Depth (ft) Water Depth	1/2 L Water Depth (ft)	1/2 R Water Depth (ft)	Sand	Gravel	Cobble	Boulder	Bedrock/ Concrete	Tree Canopy	OH Veg	Bedrock Boulder Edge	Under-cut Bank	Wood
Sub-reach c																	
3	SPBo	5.5	3.8	2.2	0	Dry	Dry	10	70	5	15		90		5		
								5	*20*								
6	SPBo	8.0	5.2	2.29	0	Dry	Dry	20	40	10	30		60				
								5	*15*								
9	SPBo	8.0	6.5	2.35	0	Dry	Dry	30	40	10	20		40	3	5		
								20	*10*								
12	SPBo	3.8	5.5	2.6	1.2	Boulder	0.64	40	30	5	25		45	2	10		
								20									
17	SPBo	4.0	3.8	2.8	0.8	Dry	0.1	30	45	5	20		20	5	15		
20	PLP	8.0	8	3.81	1.32			30	20	30	18	2	10		5		
26	PLP	6.0	8.5	2.9	1.7	1	Bedrock	30	45	3	2	20	10		5		
29	SPBo	6.0	6.5	3.2	1.6	0.39	Boulder	10	70	3	20	2	30		10	5	
32	PLP	5.5	7.5	3.98	2.54	0.83	2.18	15	65	5	2	18	60	1	3		
34	SPBk	7.0	8	4.3	3.8	Boulder	Bedrock	5	80	3	7	5	20	7	10		
36	SPBk	7.5	8	3.7	2.45	Bedrock	Bedrock	3	72	7	3	15	60		10	5	
39	PLP	10.0	8.0	4.9	3.6	Bedrock	Bedrock	10	50	10	15	5	40	2	30		
42	SPBk	7.5	5	3.19	2.24	Bedrock	Bedrock	5	35	30	20	10	5	2	15		
44	PLP	3.2	6	3.98	2.74	Boulder	1.57	2	13	5	20	60	5	1	20		
45	SPBk	9	5.5	4.1	2.83	Bedrock	Bedrock	10	40	10		30	0		30		
47	PLP	6	6	2.7	1.5	Dry	Dry	5	15	30	50		0		20		
49	SPBo	7	5.2	3.1	2.04	Bedrock	1.69	10	60	10	20		30	2	20	10	
57	PLP	6	6.5	3.25	2.09	1.12	Bedrock	20	40	5	15	20	75		15		
Sub-reach b																	
68	LSP	5.5	5	2.55	1.4	Boulder	0.47	60	20	5	20	5	0		5		
70	PLP	5	5.5	3.04	2.12	Bedrock	Bedrock	5	75	2	3	15	50	40	10		
81	MCP	10.5	6.5	3.95	3.24	2.84	1.6	16	12	2	10	60	45	5	30	10	5
84	PLP	11.5	9	6.75	4.8	4.72	4.34	20	30	20	10	20	75	5	20		

Appendix 1 (cont.)
Tables

Unit #	Level IV Habitat Type	Pool Dimensions						Substrate Comp (%) *Sidecast sediment origin (%)*					Instream cover (% of total cover)				
		Length (m)	Max Width (m)	Max Depth (ft) Bank-full	Max Depth (ft) Water Depth	1/2 L Water Depth (ft)	1/2 R Water Depth (ft)	Sand	Gravel	Cobble	Boulder	Bedrock/ Concrete	Tree Canopy	OH Veg	Bedrock Boulder Edge	Under-cut Bank	Wood
Sub-reach b- cont.																	
86	PLP/MCP	8	5.5	4.31	3.3	Bedrock	2.2	15	30	10	15	30	3		20		
96	PLP/SPBk	6	4.5	3.67	2.5	Boulder	2.46	20	30		20	30	0		20		3
100	SPBo	7	6.5	3.42	2.55	1.24	1.19	15	50	5	15	5	30	2	20		
108	SPBo	8	4.5	2.4	0	Dry	Dry	30	40	10	5	20	70	2	5		
110	SPBk	7.5	6.5	2.7	0	Dry	Dry	15	45	20		20	0		30		
								15									
115	PLP	10.5	6	3.23	0	Dry	Dry	30	40	20		10	0		30		
								20	*30*								
117	SPBk	11.5	13.3	2.27	0	Dry	Dry	5	25	20	30	15	70		10		
								3	*20*								
120	PLP	10.0	11	2.1	0	Dry	Dry	10	25	40	10	15	15		5		2
								5	*15*								
***Sub-reach a-* Creek Site area 3**																	
127	PLP	14.0	15.5	4.05	0	Dry	Dry	10	30	40	20		5				5
								6	*20*	*30*	*10*						
***Sub-reach a-* Creek Site area 4**																	
128	PLP	5.5	5.5	2.9	0	Dry	Dry		25	15	5	55	30				
									15	*5*	*1*						

*Pools that were below 2 ft. bankfull height were not sampled

Appendix 1 (cont.)
Tables

Table 4
SUMMARY OF HABITATS WITH DEPOSITED SIDECAST SEDIMENTS IN MISSION CREEK ON AUGUST 25 AND 26, 2020

Unit #	Level IV Habitat Type	% Total Sand from Sidecast	% Total Gravel from Sidecast	% Total Cobble from Sidecast	% Total Boulder from Sidecast	Max Sidecast Depth (in)	Comments
Sub-reach c							
2	LGR					2	D/S end starting at Mission Dam, fines dispersed throughout
3	SPBo	[1]50	29	0	0	2	
6	SPBo	25	38	0	0	2	
9	SPBo	67	25	0	0	2	Fines on R and L edges of pool
12	SPBo	50	0	0	0	4	
Sub-reach b **-Road Area 2**							
65	SRN					2	Road Area 2, fines in creek, boulders and fines on steep R bank
92	RUN					2	Fines after boulder
105	LGR					2	LWD damming L side of creek forming new PLP, fines dispersed
110	SPBk	100	0	0	0	3	Fines on D/S and L edges of pool
115	PLP	67	75	0	0	2	Waterfall approx. 15 ft drop, previously-deposited fines piled at base (24 in) and D/S end of pool with an overlay of lightly deposited sidecast sediments, up to 2 in. in depth
117	SPBk	60	80	60	23	3	
120	PLP	50	60	63	30	5	fines and gravel covering most of pool bottom
Sub-reach a**- Creek Site Area 1**							
121	SRN					5	Major impact from Creek Site 4; Fines, gravel, cobble and all size boulders; Lots of sediment on R bank
122	CSC					60	Same as above. Lots of large boulders in this section of creek
Sub-reach a**- Creek Site Area 2**							
123	RUN					48	Major impact from Creek Sites 3 & 4, creating split channel from fines and gravel; Fines, gravels, and cobble on steep R bank
124	LGR					5	Major impact from Creek Sites 2 & 3, fines, gravels, cobbles; Small boulders towards U/S end
Sub-reach a**- Creek Site Area 3**							
125	[2]SSDP					6	Major impact from Creek site 2, large boulders created approx. 5 ft. dam between pools 125 and 126 of boulders and cobble
126	SSDP					8	Same as above
127	PLP	60	67	75	50	5	Tunnel Road Falls; Impact from Creek Site 1, sidecast on L, R and D/S edges of pool, almost creating a new dam on D/S end; fines and cobbles on R bank; R edge of pool filled in with sidecast

Appendix 1 (cont.)
Tables

Unit #	Level IV Habitat Type	% Total Sand from Sidecast	% Total Gravel from Sidecast	% Total Cobble from Sidecast	% Total Boulder from Sidecast	Max Sidecast Depth (in)	Comments
***Sub-reach a*- Creek Site Area 4**							
128	PLP	0	60	33	20	12	Impact from Creek Site 1; fines, gravel and cobble at bottom, L, R, and D/S edge of pool; some small boulders
129	STP					24	Impact from Creek Site 1; Fines, gravel, cobbles and small boulders
130	BRS					3	U/S ending at Creek Site 1; fines and gravel

Notes: 1 Sidecast sediment composition was estimated for pools only.
2 SSDP stands for Sidecast Sediment Dammed Pool.

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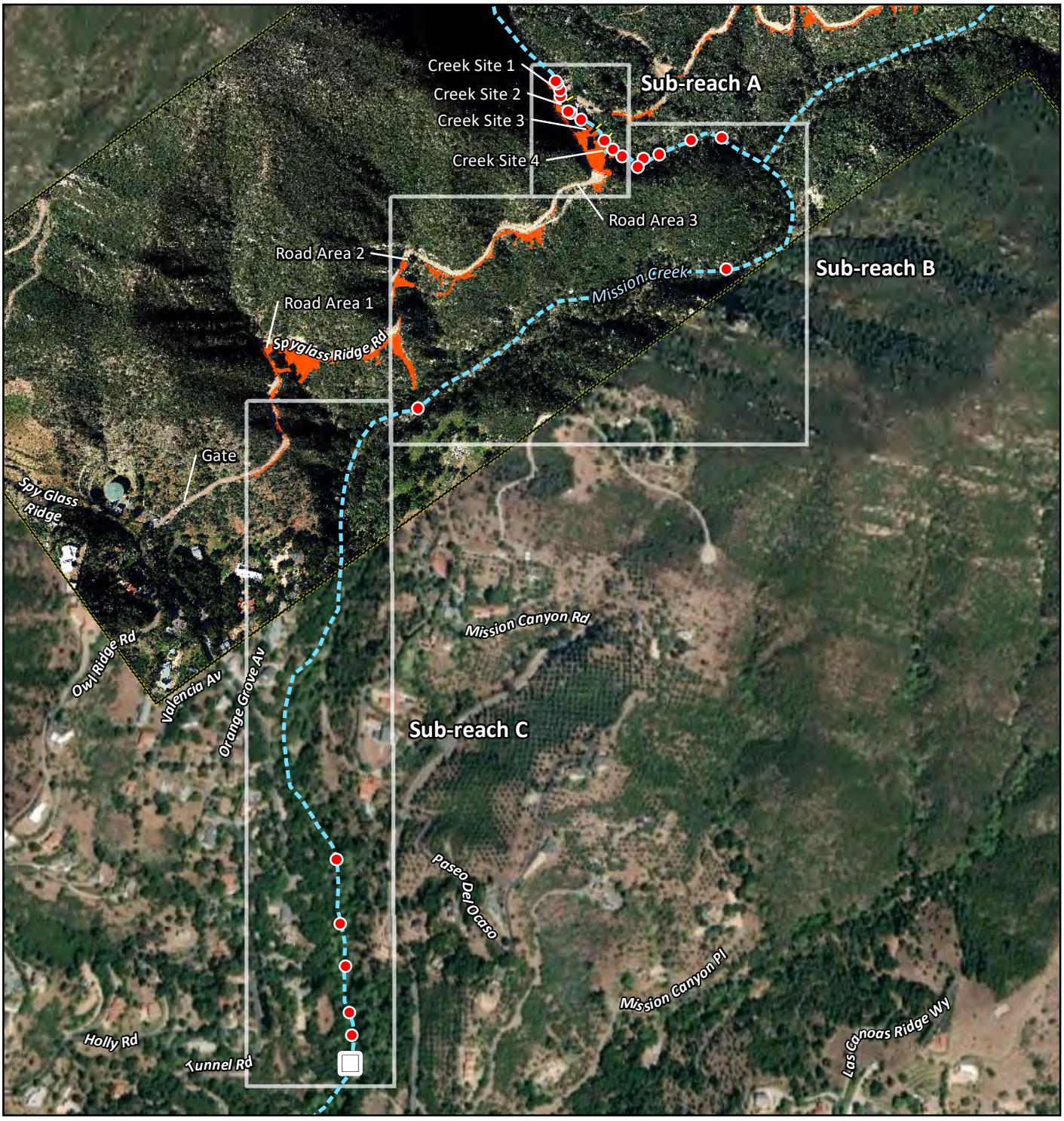
Appendix 2

Figures



Mission Dam

Habitat Unit with Sidecast

Mission Creek

Drone Ortho Boundary

Sidecast Impact Area

HELIX Environmental Planning

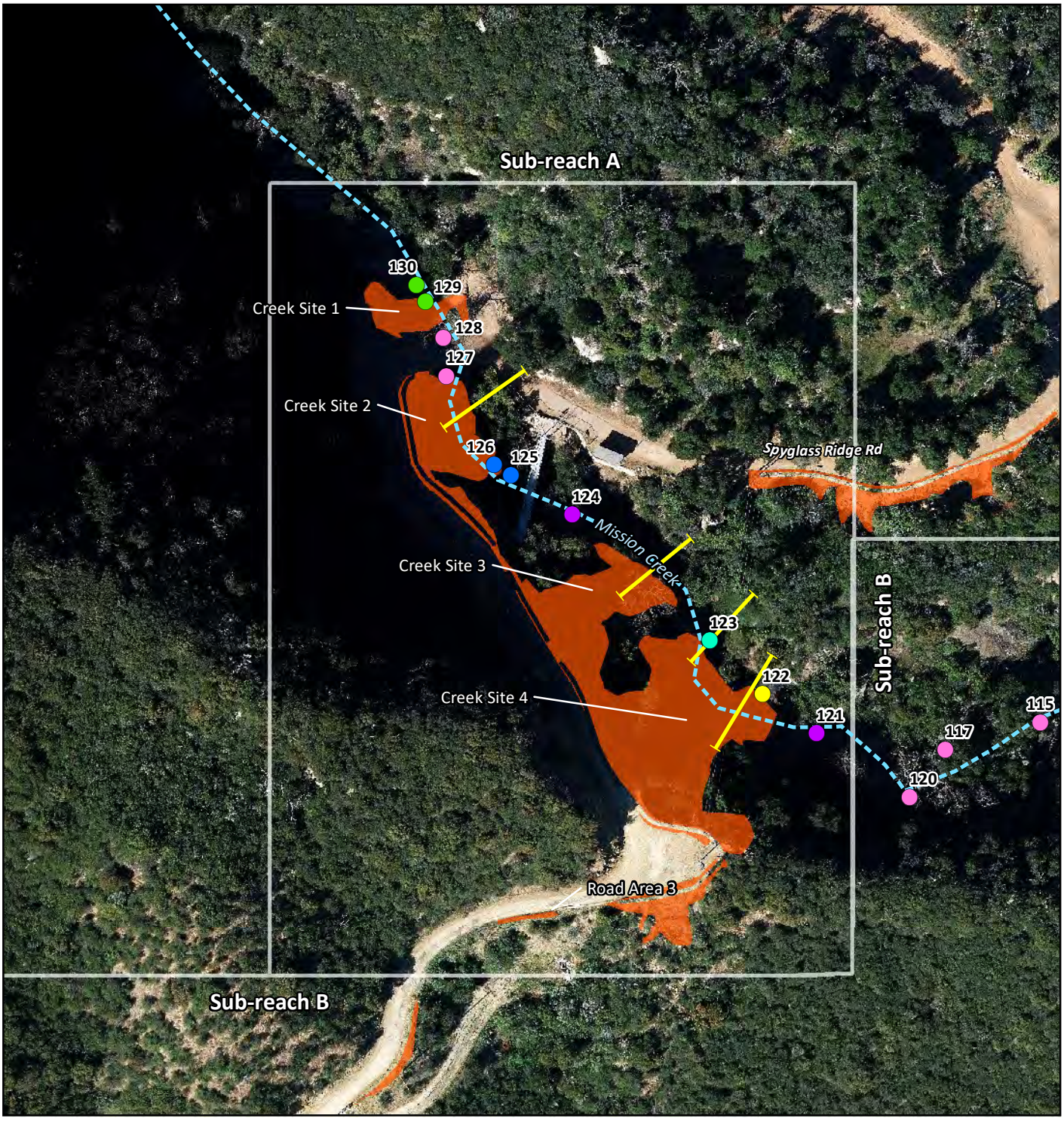
0 300 600 Feet

Source: Aerial (Michael Baker, 2020 and Maxar, 2020)

MISSION CANYON STREAM HABITAT RESTORATION PROJECT

Overview

Figure 1



Transect Location

Mission Creek

Sidecast Impact Area

Level 3 Habitat Unit with Sidecast Deposit

Backwater Pool

Cascade

Flatwater

Main Channel Pool

Riffle

Step Pool/Plunge Pool

HELIX Environmental Planning

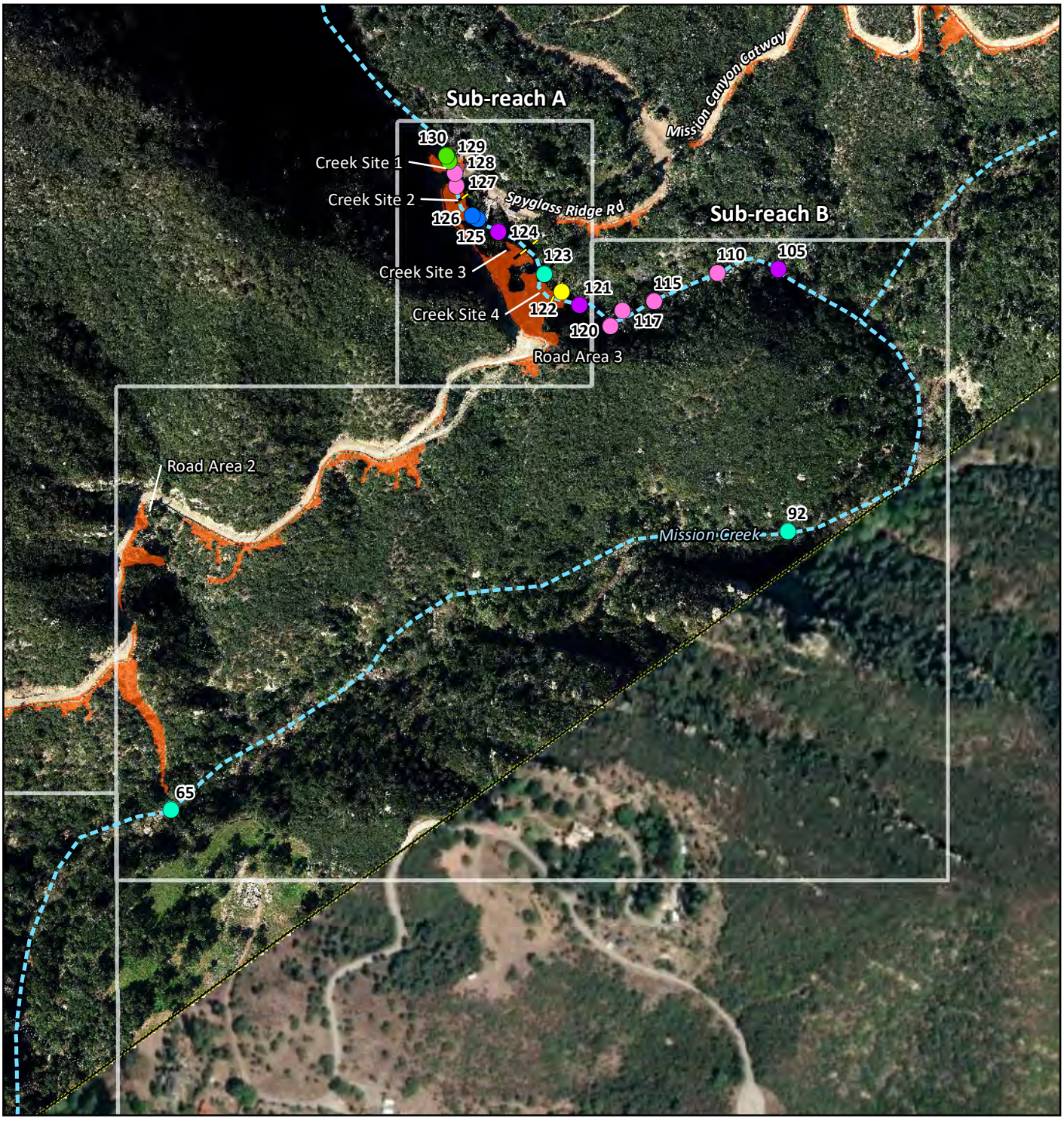
0 50 100 Feet

Source: Aerial (Michael Baker, 2020 and Maxar, 2020)

MISSION CANYON STREAM HABITAT RESTORATION PROJECT

Sidecast Deposits - Sub-reach A

Figure 2



Transect Location
Mission Creek
Sidecast Impact Area
Drone Ortho Boundary

Level 3 Habitat Unit with Sidecast Deposit

Backwater Pool
Cascade
Flatwater
Main Channel Pool
Riffle
Step Pool/Plunge Pool

HELIX Environmental Planning

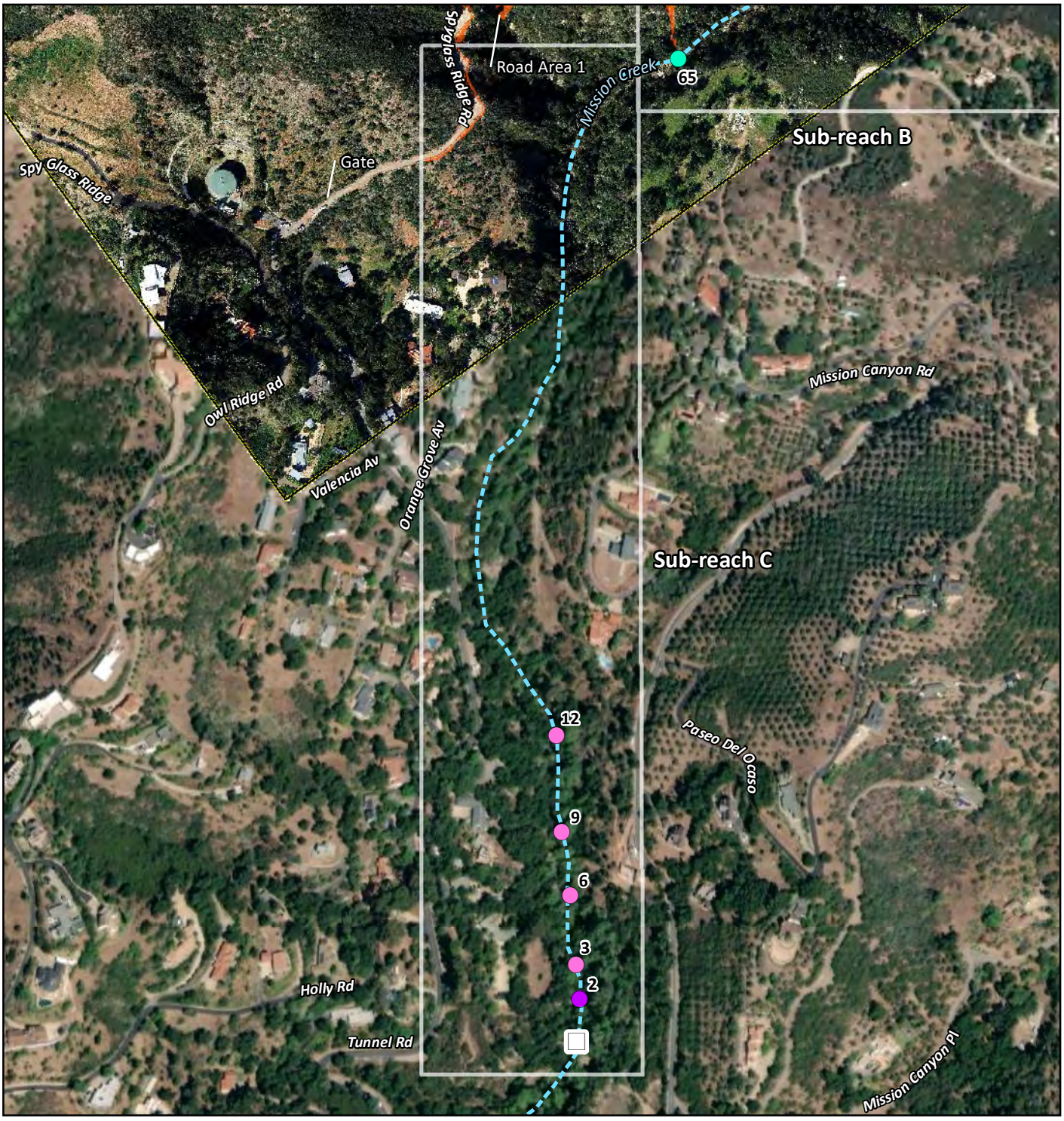
0 150 300 Feet

Source: Aerial (Michael Baker, 2020 and Maxar, 2020)

MISSION CANYON STREAM HABITAT RESTORATION PROJECT

Sidecast Deposits - Sub-reach B

Figure 3



Mission Dam
Mission Creek
Sidecast Impact Area
Drone Ortho Boundary

Level 3 Habitat Unit with Sidecast Deposit

Backwater Pool
Cascade
Flatwater
Main Channel Pool
Riffle
Step Pool/Plunge Pool

HELIX Environmental Planning

0 200 400 Feet

Source: Aerial (Michael Baker, 2020 and Maxar, 2020)

MISSION CANYON STREAM HABITAT RESTORATION PROJECT

Sidecast Deposits - Sub-reach C

Figure 4

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Appendix 3

Representative Photographs

Photo 1. Habitat unit #3, boulder formed scour pool. Sidecast sediment visible in D/S end of pool. Photo facing D/S.

Photo 2. Habitat unit #36, bedrock formed scour pool. No sidecast sediment. Photo facing D/S.

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Photo 3. Habitat unit #81, mid-channel pool. No sidecast sediment. Photo facing U/S.

Photo 4. Habitat unit #96, plunge pool at base of waterfall. No sidecast sediment. Photo facing D/S.

Photo 5. Habitat unit #110, bedrock formed scour. Sidecast sediment visible U/S end of pool (R edge), base of pool, and D/S end of pool (L edge). Photo facing U/S.

Photo 6. Habitat unit #115, plunge pool at base of a 15ft tall waterfall. Sidecast sediment fines visible in center of pool bottom. Photo facing U/S.

Photo 7. Habitat unit #117, bedrock formed scour pool/corner pool. Sidecast sediment visible in center of pool bottom and small cobbles and boulders on the outer edges. Photo facing D/S.

Photo 8. Habitat unit #120, plunge pool. Sidecast sediments, cobbles, and small boulders visible in center (R side) of pool. Photo facing D/S.

Photo 9. Habitat unit #120, closeup of sidecast fines and gravels measurement at base of pool. Photo facing U/S.

Photo 10. Habitat unit #122, cascade habitat at base of Creek Site 1. Sidecast boulders visible in creek. Photo taken from R bank looking across creek.

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Photo 11. Habitat unit #122, Creek Site 1 transect 2 location. Sidecast boulders, cobbles, gravels, and fines on the R bank above the creek. Photo taken from creek looking at the R bank.

Photo 12. Habitat unit #123, run habitat at base of Creek Site 2. Sidecast fines, gravel, cobble, and small boulders visible in creek. Photo taken from L bank looking across creek.

Photo 13. Habitat unit #123, Creek Site 2 sidecast deposit transect 3 location. Sidecast fines, gravel, cobble, and small boulders on the R bank. Photo taken from creek looking at R bank.

Photo 14. Habitat unit #124, low gradient riffle habitat at base of Creek Site 3, transect 4. Sidecast cobbles and boulders in creek. Photo facing D/S.

Photo 15. Habitat unit #125, first of two pools formed due to large sidecast boulders and cobbles dam. Photo facing U/S.

Photo 16. Habitat unit #126, second of two pools formed due to large sidecast boulders and cobbles dam. Photo facing D/S.

Photo 17. Habitat unit #127, plunge pool at base of Tunnel Road Falls, Creek Site 3. Large sidecast boulders, cobbles, gravels, and fines visible at bottom and outer edges of pool. Photo facing D/S.

Photo 18. Habitat unit #128, plunge pool underneath bridge. Sidecast boulders, gravels, and fines visible toward outer edges of pool. Photo facing D/S.

Photo 19. Habitat unit #129, step pools at the base of Creek Site 4. Sidecast boulders, cobbles, gravels and fines visible throughout creek. Photo facing D/S.

Photo 20. Highway 192 Bridge, Compensatory Mitigation Option 1 on Mission Creek. Photo facing U/S.

Photo 21. Wear on R side of concrete apron of the Highway 192 Bridge, Compensatory Mitigation Option 1. Photo facing D/S.

Photo 22. Scour pool habitat and boulders underneath Highway 192 Bridge, Compensatory Mitigation Option 1. Photo facing D/S.

Photo 23. Mission Canyon Road Bridge, Compensatory Mitigation Option 2 on Mission Creek. Photo facing D/S.

Photo 24. Concrete slough underneath Mission Canyon Road Bridge, Compensatory Mitigation Option 2 on Mission Creek. Photo facing D/S.

Photo 25. Plunge pool habitat and eroded apron on D/S end of Mission Canyon Road Bridge, Compensatory Mitigation Option 2 on Mission Creek. Photo facing U/S.

Photo 26. Las Canoas Road Bridge, Compensatory Mitigation Option 3, on Rattlesnake Creek. Photo facing D/S.

Photo 27. Flat concrete apron underneath Las Canoas Road Bridge, Compensatory Mitigation Option 3, on Rattlesnake Creek. Photo facing D/S.

Photo 28. Plunge pool habitat and sloping apron of Las Canoas Road Bridge, Compensatory Mitigation Option 3, on Rattlesnake Creek. Photo facing U/S.

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Photo 29. 20-inch Pipeline Crossing, Compensatory Mitigation Option 4, on Rattlesnake Creek. Photo from Stoecker 2002.