Draft
Habitat Conservation Plan for the

Cross Valley Transmission Line

Prepared for:

Southern California Edison

June 2013

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Cross Valley Transmission Line

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TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS

Section **Page**

Appendices

Figures

TABLE OF CONTENTS

Page

Tables

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY

PURPOSE OF THE HABITAT CONSERVATION PLAN

Construction and/or future operations and maintenance (O&M) of the proposed Southern California Edison (SCE) Cross Valley Transmission Line (Cross Valley Line) may harass, harm, or kill (i.e., “take”) species listed by the U.S. Fish and Wildlife Service (USFWS) as threatened or endangered under the Endangered Species Act (ESA). Therefore, SCE is seeking a permit pursuant to Section 10 of the ESA for take of these species during construction and future O&M along the 23-mile-long Cross Valley Line.

A habitat conservation plan (HCP) is a required component of a Section 10 incidental take permit (ITP) application. The overall purpose of a HCP is to develop and implement a conservation plan that would avoid, minimize, and compensate for the incidental take of Federally listed species, and the incidental take of species that could become listed during implementation of the HCP.

Therefore, the Cross Valley Line HCP has been prepared as part of SCE’s ITP application. In addition to the construction and future O&M of the Cross Valley Line, the ITP application includes future O&M activities for the existing transmission line located in the north-south portion of the proposed Cross Valley Line’s transmission corridor.

SCOPE OF THE HABITAT CONSERVATION PLAN

DURATION

SCE has determined that 30 years is sufficient for it to construct and operate the Cross Valley Line and to implement related avoidance, minimization, and mitigation measures. In addition, predicting effects of the operational Cross Valley Line beyond 30 years may be difficult because species’ distribution and listing status may change over time. SCE may elect to apply for renewal of the HCP and ITP at the end of the 30-year-long permit term.

PLANNING AREA

The HCP Planning Area consists of the location of the proposed 23-mile Cross Valley Line, the right-of-way (ROW) lands located beneath the new line, unimproved and paved roads that SCE would use to access the ROW, existing laydown yards where materials and equipment would be stored, temporary work areas adjacent to new tubular steel pole (TSP) or lattice steel tower (LST) structures, lands adjacent to the ROW boundary, and lands adjacent to new access roads. In total, the HCP Planning Area encompasses approximately 3,385 acres.

COVERED SPECIES

Species proposed for coverage are those for which the HCP provides for their conservation and management, and for which take authorization may be required during the term of the HCP. SCE identified these species based on an initial assessment of the potential effects of Covered Activities on listed species and species that could become listed during the term of the HCP. A total of 39 special-status species with the potential to occur in the HCP

Planning Area (23 animals and 16 plants) were evaluated for coverage on the basis of specific criteria. Of these, 13 species met all of these criteria and are included as Covered Species addressed by this HCP:

- Vernal pool fairy shrimp
- Vernal pool tadpole shrimp
- Valley elderberry longhorn beetle
- California tiger salamander
- Western spadefoot toad
- Little willow flycatcher
- Southwestern willow flycatcher
- Least Bell’s vireo
- Western burrowing owl
- San Joaquin kit fox
- Hoover’s spurge
- San Joaquin Valley Orcutt grass
- Spiny-sepaled button-celery

These Covered Species are expected to be named in the ITP. In exchange, the HCP includes avoidance, minimization, and mitigation measures for each species and provisions for the long-term conservation and management of all 13 species, whether or not they are currently listed. Accordingly, any nonlisted species addressed by the HCP’s conservation strategy would not require additional conservation within the HCP Planning Area should that species become listed under the Federal ESA during the term of the ITP. SCE would also receive similar assurances for listed species that are included as Covered Species.

COVERED ACTIVITIES

The HCP describes the construction and O&M of the Cross Valley Line in terms of 22 activities (Covered Activities) that could result in take of Covered Species. Covered Activities may be performed by SCE employees or contractors.

Construction of the Cross Valley Line would entail the following Covered Activities:

- Operation and restoration of existing laydown yards
- Construction of new access roads
- Improvement and repair of existing access roads
- Construction of transmission line structures
- Stringing of conductors and optical ground wires (OPGWs)
- Installation of storm water pollution prevention plan best management practices

O&M Covered Activities are organized into two classes (Class 1 and Class 2), defined by the location and type of land disturbance associated with the activity. Class 1 O&M activities would be conducted entirely within the drivable surface of access roads or within TSP and LST structure pads, or would be implemented from aircraft/helicopter; therefore, these activities would not disturb vegetation or the soil surface of natural land cover (but could harass, harm, or kill an individual of a Covered Species). Six Class 1 O&M Covered Activities would occur:

- Aerial inspections
- Routine line patrols in the HCP Planning Area
- OPGW testing
- Minor repairs to LST and TSP structures
- Minor repairs to conductors
- Insulator washing

Class 2 O&M Covered Activities would be conducted in part in natural land cover outside of TSP and LST structure pads and outside the drivable surface of access roads; therefore, these activities may disturb vegetation and land in those areas. Ten Class 2 O&M Covered Activities would occur:

- Major repairs to TSP and LST structures
- TSP replacement
- LST replacement
- Major repairs to conductors and OPGWs
- Repair/replacement of bird flight diverters
- Access road maintenance
- Maintenance and replacement of road drainage systems and stormwater diversion structures
- Installation of storm water pollution prevention plan best management practices
- Vegetation management—tree pruning
- ROW management—brush and weed abatement

IMPACT ASSESSMENT

Based on the description of Covered Activities and a description of natural resources in the HCP Planning Area, the HCP evaluates the potential effects of Covered Activities on Covered Species. For each Covered Species, this evaluation includes an estimate of the acreage of suitable habitat that would be temporarily or permanently affected by Covered Activities. The total amount of land subject to disturbance is approximately 90 acres. However, some areas would be disturbed multiple times during the 30-year term of the ITP, and as a result, total disturbance of suitable habitat would be approximately 190 acres.

Covered Species differ in the amount of suitable habitat that would be affected. For each species, different types of natural or agricultural vegetation provide habitat, and thus, different amounts of suitable habitat would be disturbed. Also, in some instances, effects on a species' habitat could extend beyond the boundaries of areas directly disturbed by Covered Activities.

To determine amounts of proposed mitigation, effects on suitable habitat were tabulated based on their duration (temporary versus permanent) and location relative to the Friant-Kern Canal (because landscapes west of the canal generally provide lower quality habitat). Effects on habitat adjacent to disturbed areas, which would generally reduce habitat quality but would not eliminate habitat, also were tabulated separately.

CONSERVATION STRATEGY

For each Covered Species, the HCP’s conservation strategy provides biological goals and objectives, a set of measures that constitutes this HCP’s approach to minimizing effects and mitigating unavoidable effects on the species, and a rationale for the approach to minimization and mitigation.

MINIMIZATION MEASURES

Measures to minimize effects on Covered Species consist of standard planning and design measures and general construction avoidance and minimization measures (AMMs), which are initially presented as part of the Covered Activities, and also additional measures specific to a particular species or habitat (e.g., wetlands). In total, 54 measures to minimize effects are included in the HCP. SCE and its contractors would implement these measures as applicable during Covered Activities.

MITIGATION STRATEGY

As mitigation for unavoidable effects on Covered Species (including their habitat), SCE proposes to implement one of the following options for each Covered Species:

- Purchase mitigation credits at a USFWS-approved conservation bank(s).
- Preserve compensatory habitat in perpetuity at a USFWS-approved permittee-responsible (“turnkey”) mitigation site.
- Restore and protect habitat on-site.
- Implement a combination of the above approaches.
- Enact another means acceptable to USFWS.

In total, the Cross Valley Line HCP proposes that approximately 15 acres of vernal pool and just over 200 acres of grassland mitigation land provide suitable habitat for Covered Species at a conservation bank and/or “turnkey” mitigation site. The HCP also proposes purchasing mitigation credits for valley elderberry longhorn beetle, consistent with USFWS mitigation guidelines, at a USFWS-approved conservation bank. SCE would implement a riparian habitat enhancement plan to augment riparian habitat in the HCP Planning Area (Appendix F). There may also be opportunities to offset impacts on other species’ habitats through on-site habitat restoration and/or protection. A summary of the estimated area of effect and proposed mitigation acreage is provided in Table ES-1.

HABITAT CONSERVATION PLAN IMPLEMENTATION

The HCP also describes plan implementation. Implementation of the HCP includes monitoring, adaptive management, reporting, and funding. Changes to circumstances affecting the HCP and revision and amendment processes are also described.

Table ES-1
Summary of Proposed Compensatory Mitigation for the Cross Valley Line

Habitat (Species)	Impacts (Acres)[1]	Proposed Mitigation (Acres)	Proposed Location
Vernal Pool/Swale Habitat (VPFS/VPTS/CTS [reproduction]/WSFT [reproduction]/HOSP/SJVOG/SSBC)			
Permanent Direct Impacts	0.15	14.86	USFWS-approved conservation bank or USFWS-approved permittee-responsible mitigation site
Permanent Indirect Impacts	4.71		
Temporary Impacts	0.25		
Annual Grassland Habitat (CTS [aestivation/foraging]/WSFT [aestivation/foraging]/BUOW [reproduction]/SJKF [reproduction]/HOSP/SJVOG)			
Permanent Direct Impacts	40.96	169.58	USFWS-approved conservation bank or USFWS-approved permittee-responsible mitigation site
Permanent Indirect Impacts	0		
Temporary Impacts	52.40		
Agricultural Habitat (CTS [movement]/BUOW [foraging]/SJKF [foraging/movement])			
Permanent Direct Impacts	11.65	33.82	USFWS-approved conservation bank or USFWS-approved permittee-responsible mitigation site
Permanent Indirect Impacts	0		
Temporary Impacts	70.00		
Riparian Habitat (LWF/SWF/LBV) [2]			
Permanent Direct Impacts	0	Riparian habitat enhancement	Along the St. John’s River in HCP Planning Area
Permanent Indirect Impacts	0		
Temporary Impacts	0		
Elderberry Shrubs (VELB)			
Permanent Direct Impacts	To be determined, based on preconstruction surveys	Mitigate according to USFWS VELB Guidelines	USFWS-approved conservation bank
Permanent Indirect Impacts			
Temporary Impacts			

Notes: BUOW = burrowing owl; CTS = California tiger salamander; HOSP = Hoover's spurge; LBV = least Bell's vireo; LWF = little willow flycatcher; SJKF = San Joaquin kit fox; SJVOG = San Joaquin Valley Orcutt grass; SSBC = spiny-sepaled button celery; SWF = Southwestern willow flycatcher; USFWS = U.S. Fish and Wildlife Service; VELB = valley elderberry longhorn beetle; VPFS = vernal pool fairy shrimp; VPTS = vernal pool tadpole shrimp; WSFT= Western spadefoot toad

[1] Acres depict the greatest impact incurred for the land cover type.

[2] Although Covered Activities would not result in the removal of any riparian habitat, temporary Covered Activities have the potential to cause harassment of nesting birds.

Source: Data compiled by AECOM in 2013

MONITORING

Per regulation, an HCP must include monitoring of conservation measures and the response of Covered Species to these measures. The monitoring plan outlined in the Cross Valley Line HCP is designed to meet the following five objectives:

- Evaluate progress toward the biological goals described in the HCP's conservation strategy for each species.
- Document actual effects associated with construction and O&M Covered Activities.
- Document implementation, compliance with, and effectiveness of construction and O&M AMMs.
- Document compliance with and effectiveness of compensatory and other mitigation requirements.
- Identify changed circumstances, if any.

ADAPTIVE MANAGEMENT

The adaptive management program of the Cross Valley Line HCP is designed to address the following key uncertainties:

- **Accuracy of HCP Estimates of Covered Species Take**—The HCP's impact assessment estimates the amount of take for each Covered Species. Should monitoring find these estimates to be inaccurate, SCE would adjust mitigation requirements as necessary.

- **Location of Environmentally Sensitive Areas—**Environmentally Sensitive Areas include suitable habitat of Covered Species as well as species-specific buffers/avoidance areas around these habitats, and their mapped locations are necessary for implementing a number of the HCP's minimization measures. Thus, SCE would update maps of these areas periodically based on the results of monitoring and implementation of minimization measures.

- **Effectiveness of Minimization Measures**—Based on a review of monitoring results, "lessons learned" and alternative strategies would be identified and measures revised in coordination with USFWS to increase the minimization measures' effectiveness, as necessary.

ANNUAL REPORTS

An annual report documenting implementation of Covered Activities, effects, conservation actions, management actions, habitat revegetation actions, results of monitoring efforts (i.e., compliance monitoring, effects monitoring, and effectiveness monitoring), and any proposed adaptive management actions would be prepared and submitted to USFWS throughout the term of the ITP.

PLAN FUNDING

SCE would be responsible for funding full implementation of this HCP. Costs associated with implementation of the HCP are as follows:

- Administration and training
- Securing compensatory mitigation sites in perpetuity
- Implementation of AMMs

- Implementation of monitoring and adaptive management on mitigation sites
- Implementation of remedial actions for changed circumstances

SCE would fund implementation of the HCP using the operating budgets of relevant departments.

CHANGED AND UNFORESEEN CIRCUMSTANCES

The HCP describes SCE's obligations for addressing changes in circumstances affecting a species or geographic area covered by the HCP that can reasonably be anticipated and planned for ("changed circumstances"). These changed circumstances include new species listings and new critical habitat designations in the HCP Planning Area, unexpected discovery of additional listed species in the HCP Planning Area, climate change, invasion by nonnative species, vandalism, and several natural disasters (e.g., fire, drought, floods).

Changes in circumstances not described as changed circumstances, which would result in a substantial and adverse change in the status of a Covered Species, are considered "unforeseen circumstances." The No Surprises Rule provides SCE with assurances regarding unforeseen circumstances: no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of permittees.

PLAN REVISION AND AMENDMENT

The HCP and the ITP may be modified in accordance with existing regulations. Modifications to the HCP may be requested by SCE or USFWS. Two categories of changes are described: minor modifications and more substantial revisions that would require an amendment to the HCP. Amendments may include but are not limited to any of the following types of changes to the HCP:

- Changes to the HCP Planning Area boundary

- Increases in the level of incidental take permitted by the HCP

- Changes to funding except as otherwise provided for in the HCP to account for all adjustments for inflation, adaptive management, and changed circumstances

- Addition of species to the Covered Species list

- Changes to the Covered Activities that were not addressed in the HCP as originally adopted, and that do not otherwise meet the minor modification provisions

- Extension of the term of the ITP past the 30-year permit duration

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1 INTRODUCTION AND BACKGROUND

1.1 OVERVIEW

Southern California Edison (SCE), a fully owned subsidiary of Edison International Corporation, seeks an incidental take permit (ITP) pursuant to Section 10(a)(1)(B) of the Endangered Species Act (ESA). SCE seeks the ITP for the incidental take of Federally listed species that may occur during construction and future operations and maintenance (O&M) along the 23-mile-long SCE Cross Valley Transmission Line (Cross Valley Line).

Construction and future O&M activities for the proposed Cross Valley Line may cause incidental take of species that are Federally listed as threatened or endangered. Therefore, SCE has decided to apply to the U.S. Fish and Wildlife Service (USFWS) for an ITP that would authorize the incidental take of Federally listed species during SCE's lawful construction and O&M activities for the proposed Cross Valley Line. This habitat conservation plan (HCP) was prepared by SCE to support SCE's application for an ITP. The HCP also includes future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor.

As specified in ESA Sections 10(a)(2)(A) and 10(a)(2)(B), a conservation plan is a mandatory component of all ITP applications. The overall purpose of this HCP is to develop and implement a conservation plan that would avoid, minimize, and compensate for the incidental take of listed threatened and endangered species, and the incidental take of species that could become listed over the proposed 30-year term of SCE's ITP.

1.2 BACKGROUND

1.2.1 EXISTING FACILITIES

SCE owns and operates the Big Creek Hydroelectric System, a facility that consists of six major reservoirs, 27 dams, nine powerhouses, and miles of interconnecting infrastructure. Located on the western slope of the Sierra Nevada, the Big Creek Hydroelectric System generates approximately 1,000 megawatts of electricity. Power from three of the powerhouses—Big Creek Nos. 1, 3, and 4 (Figure 1-1)—is transmitted to customers in the San Joaquin Valley via four 220-kilovolt (kV) transmission lines. These four transmission lines are located in two corridors, commonly referred to as the Big Creek Corridors. ("Corridor" is a general term for the area of land with a relatively constant width along a transmission line.)

The westerly Big Creek Corridor contains the Big Creek 1-Rector and Big Creek 3-Rector 220 kV transmission lines (represented by the blue and purple line in Figure 1-1). These transmission lines extend from Big Creek Powerhouses No. 1 and No. 3, respectively, to Rector Substation near Visalia. The easterly Big Creek Corridor contains the Big Creek 3-Springville and Big Creek 4-Springville 220 kV transmission lines (represented by the green line in Figure 1-1). These lines extend from Big Creek Powerhouses No. 3 and No. 4, respectively, to Springville Substation in Tulare County. Each of these four transmission lines (two each within each corridor) is constructed primarily on single-circuit[1] lattice steel towers (LSTs) and is located within a 150-foot-wide right-of-way (ROW).[2] However, the southernmost 11 miles of the Big Creek 1-Rector and Big Creek 3-Rector 220 kV transmission lines are constructed primarily on double-circuit tubular steel poles (TSPs) with a single pole at each support point, rather than on two side-by-side single-circuit LSTs. Because only one pole is installed at each support point, approximately half of SCE's existing north-south ROW (an approximately 75-foot-wide western portion of the 150-foot-wide ROW) is occupied along this segment.

Existing unimproved roads provide SCE with vehicular access to the locations of TSP and/or LST pads within SCE's existing north-south ROW. Because SCE acquires most of the rights to ROW land when it purchases a ROW easement, SCE has access and modification rights within the ROW as they pertain to transmission line construction and subsequent O&M. However, the landowner retains control over land use decisions that are not otherwise specified by the easements.

The 220 kV electrical power transmitted from the Big Creek powerhouses to Rector Substation and Springville Substation is of too high a voltage for residential and commercial customers to use. Therefore, the two substations reduce the voltage to distribution levels for customer consumption in the San Joaquin Valley.

1.2.2 CURRENT CONSTRAINTS ON THE ELECTRICAL SYSTEM

The Big Creek 1-Rector and Big Creek 3-Rector transmission lines (shown in blue and purple in Figure 1-1) that conduct electricity from Rector Substation to consumers have reached capacity because the use of electricity has increased as the population has grown and urban growth patterns in the area served by Rector Substation have changed. During periods of heavy electrical demand, such as extremely cold or hot weather, the two transmission lines can become overloaded, causing power outages in the system. Any power outage of one of these two transmission lines during these heavy-demand periods prevents Rector Substation from distributing electrical power to many of SCE's residential and commercial customers in the Rector Substation service area, which is located in Tulare and Kings Counties.

Thus, such transmission line outages result in electrical outages or a "voltage collapse" within Rector Substation's service area. North American Electric Reliability Corporation/Western Electricity Coordinating Council Standard TPL-003 (2013) defines a "voltage collapse area" as a geographic area where power is lost for an extended period of time. In the event of a voltage collapse, SCE may be unable to serve up to 50,000 of its residential and commercial customers that rely on Rector Substation for electrical power. Outages within the Rector Substation service area would continue until the transmission line experiencing the outage is repaired or heavy electrical demand is substantially reduced. Because of the increased demand for electricity in Rector Substation's service area, this overload condition is expected to increase by 5 percent per year in coming years.

[1] Both TSPs and LSTs can be designed to support either one or two "circuits" of electrical current, which are referred to as single-circuit or double-circuit structures, respectively. In this case, each transmission line listed above (e.g., Big Creek 1-Rector, Big Creek 3-Rector) is considered one "circuit," which can be supported by either two sets of single-circuit structures or one set of double-circuit structures.

[2] The term "ROW" is used to describe a continuous strip or corridor of land that the owner of the ROW may use for any use or purpose provided for by the land-right agreements for the ROW. This use may include construction and O&M of access roads, TSP lines, and LST pads.

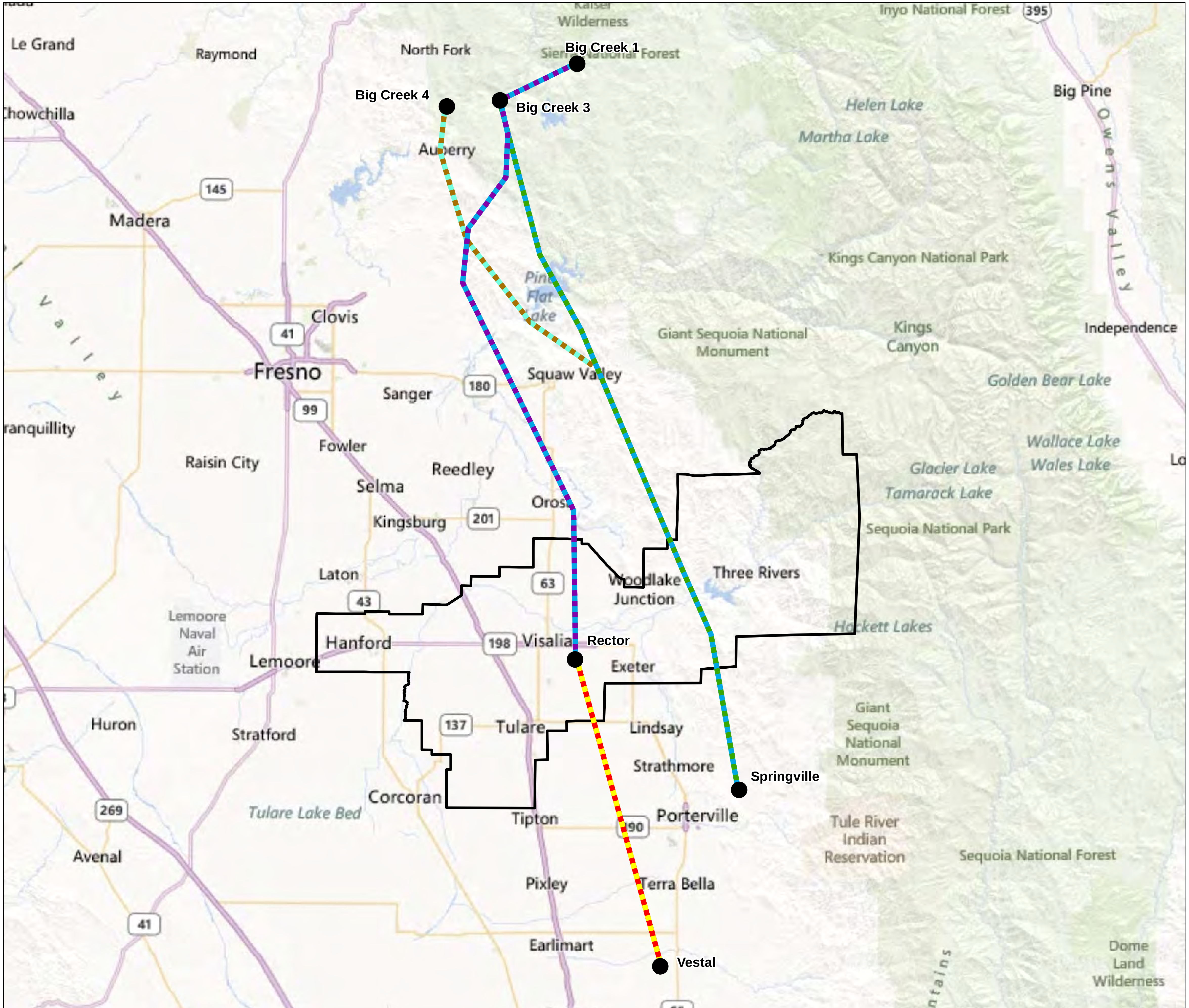

Figure 1-1
San Joaquin Valley Existing Electrical Transmission Infrastructure

- Existing Substation
- Rector Substation Service Area
- Big Creek 1 - Rector and Big Creek 3 - Rector
- Big Creek 3 - Springville and Big Creek 4 - Springville
- Big Creek 4 - Springville
- Rector - Vestal 1 and Rector - Vestal - 2

N W E S

0 5 10 20 Miles

Source: ESRI 2010; SCE 2012

Features depicted herein are planning level accuracy, and intended for informational purposes only. Distances and locations may be distorted at this scale. Always consult with the proper legal documents or agencies regarding such features.

SCE Cross Valley Line Transmission Project Habitat Conservation Plan

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1.2.3 PURPOSE AND OVERVIEW OF THE PROPOSED CROSS VALLEY LINE

The purpose of constructing and operating the proposed Cross Valley Line is to reduce the likelihood that the Big Creek 1-Rector and Big Creek 3-Rector 220 kV transmission lines would overload. The California Independent System Operator Corporation (CAISO)[3] identified "looping" (i.e., connecting) the existing Big Creek 3-Springville 220 kV transmission line into Rector Substation as the most economically feasible option for a transmission line upgrade to reduce the possibility that the two Big Creek lines currently serving Rector Substation would overload. (The Big Creek-Springville 220 kV line is shown in green in Figure 1-1, while the two Big Creek-Rector lines are shown in blue and purple in Figure 1-1.)

Looping this existing line into Rector Substation would create two new circuits, referred to in this HCP as the Big Creek 3-Rector No. 2 220 kV line and Rector-Springville 220 kV line. These two new circuits are collectively referred to as the "Cross Valley Line" in this document because they would be consolidated onto one set of double-circuit poles. These lines would give SCE greater reliability and improve its flexibility to distribute electrical power to Rector Substation, especially during periods of high electrical demand, and/or if one of the two transmission lines currently serving Rector Substation were to fail.

As noted above, the proposed Cross Valley Line would consist of a new, double-circuit 220 kV transmission line, approximately 23 miles long, that would loop the existing Big Creek 3-Springville transmission line (represented by a green line in Figures 1-1 and 1-2) to the existing Rector Substation in Visalia (Figure 1-2), creating the new Big Creek 3-Rector No. 2 220 kV (Big Creek 3-Rector No. 2) and Rector-Springville 220 kV (Rector-Springville) transmission line circuits (Figure 1-3).

The 23-mile-long proposed Cross Valley Line would include 90 new TSPs and 16 new LSTs. The proposed Cross Valley Line (shown in red in Figure 1-2) would begin at Rector Substation in Visalia. Approximately 10.8 miles of the transmission line would be constructed in the eastern half of the existing 150-foot-wide north-south SCE ROW, which is currently vacant of electrical infrastructure. The other approximately 12.2 miles of the proposed Cross Valley Line would travel east-west, in a new ROW acquired by SCE. The proposed Cross Valley Line would then terminate at a tie-in with the existing Big Creek 3-Springville transmission line (see the junction of the red and green lines in Figure 1-2).

For the proposed Cross Valley Line to connect with the existing Big Creek 3-Springville transmission line, two existing Big Creek 3-Springville LST structures, one immediately north and one immediately south of the connection point, would need to be demolished and rebuilt. Additionally, two existing LSTs (one immediately north and the other immediately south of the two demolished LSTs) would be fitted with new grounding equipment and used to ground the circuit.

1.2.4 PREVIOUS ENVIRONMENTAL ANALYSIS

Article XII of the California Constitution charges the California Public Utilities Commission (CPUC) with regulating all investor-owned public utilities, including SCE. As a result, SCE is required by Section 1001 of the

[3] The CAISO is a nonprofit public benefit corporation that manages the flow of electricity across high-voltage, long-distance power lines that make up 80 percent of California's power grid. CAISO puts together transmission plans and studies on an annual basis to determine short- and long-term infrastructure needs.

Public Utilities Code to obtain a permit from CPUC for construction of certain specified infrastructure. CPUC reviews permit applications under two concurrent processes:

- An environmental review pursuant to the California Environmental Quality Act (CEQA).
- The review of the project need and costs pursuant to Public Utilities Code Section 1001 and General Order 131-D. Based on the requirements set forth in General Order 131-D, SCE is required to apply for a Certificate of Public Convenience and Necessity (CPCN) before constructing the Cross Valley Line.

As part of the permitting processes described above, CPUC prepared a draft and final environmental impact report (EIR) under CEQA for SCE's San Joaquin Cross Valley Loop Transmission Line Project (CPUC, 2009 and 2010), of which the Cross Valley Line is a part. The EIR addressed the potential environmental impacts of the San Joaquin Cross Valley Loop Transmission Line Project. After thorough review of the draft and final EIR and certification of the EIR, CPUC granted SCE a CPCN to construct the San Joaquin Cross Valley Loop Transmission Line Project, including the Cross Valley Line (CPCN Application Number 08-05-039). In addition to the Cross Valley Line, this CPCN also authorized three other actions:

- Dismantling and removing the old Big Creek 1-Rector and Big Creek 3-Rector transmission line
- Rebuilding a portion of the existing Big Creek 1-Rector and Big Creek 3-Rector 220 kV transmission lines (i.e., completing the Big Creek Rebuild Project) to replace aging infrastructure; and
- Upgrading Rector, Big Creek 3, Vestal, and Springville Substations

The Big Creek Rebuild Project, which has been completed, and the substation upgrades were required to upgrade aging infrastructure. As described above, the Cross Valley Line is required to loop (i.e., connect) Rector Substation and the Big Creek-Springville 220 kV line to give SCE greater reliability and improve its flexibility to distribute electrical power to Rector Substation, especially during periods of high electrical demand, and/or if one of the two transmission lines (Big Creek 1-Rector or Big Creek 3-Rector) currently serving Rector Substation were to fail.

The Big Creek Rebuild and the substation upgrades have independent utility from the construction of the Cross Valley Line, and thus are not interrelated or interdependent.

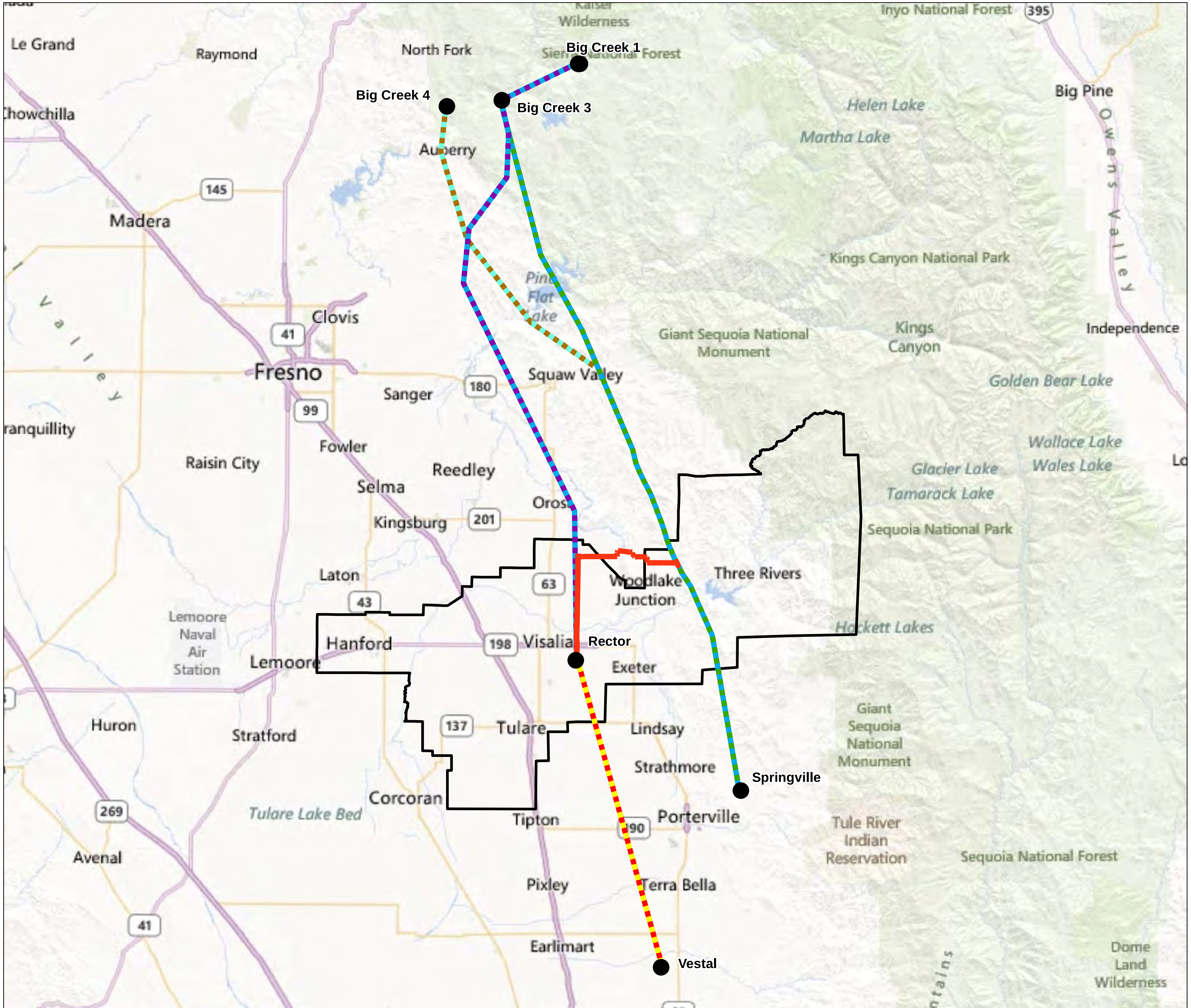
1.3 PERMIT APPLICANT

The permit applicant is SCE, and SCE would become the sole permit holder (i.e., the Permittee) if USFWS were to issue the ITP. Chapter 2 of this HCP describes Covered Activities under the ITP. HCP Covered Activities could be implemented by SCE employees, or by SCE contractors working under SCE supervision, as specified in Chapter 7, Implementation.

1.4 PERMIT TERM

SCE is requesting authorization for incidental take of certain Federally listed species and for other species that may be listed during the proposed permit term. These species could be affected during construction and/or O&M activities for the Cross Valley Line.

Figure 1-2
Overview of the Proposed Cross Valley Line



Existing Substation
Rector Substation Service Area
Big Creek 1 - Rector and
Big Creek 3 - Rector
Big Creek 3 - Springville and
Big Creek 4 - Springville
Big Creek 4 - Springville
Rector - Vestal 1 and
Rector - Vestal - 2
Proposed Cross Valley Line

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0 5 10 20 Miles

Source: ESRI 2010; SCE 2012

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SCE Cross Valley Line Transmission Project
Habitat Conservation Plan

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SCE requests a permit term of 30 years. The Cross Valley Line is expected to require 1 year or less for construction and to be operational for a minimum of 70 years, during which time O&M activities would occur. The 30-year period was developed in consideration of the 2000 Five-Point Policy (see Section 1.7, Regulatory Framework). SCE determined that 30 years is sufficient for it to construct and operate the Cross Valley Line and to implement related avoidance, minimization, and mitigation measures. In addition, predicting effects of the operational Cross Valley Line beyond 30 years may be difficult because species' distribution and listing status may change over time. For this same reason, amendments to the ITP might be required for periods beyond 30 years. As discussed in Chapter 7, Implementation, SCE may elect to apply to renew or amend the HCP and ITP at the end of the 30-year-long permit term.

1.5 HABITAT CONSERVATION PLAN PLANNING AREA

Figure 1-4 provides a map depicting the general location of the HCP Planning Area. The HCP Planning Area consists of the location of the proposed 23-mile Cross Valley Line, the ROW lands located beneath the new line, unimproved and paved roads that SCE would use to access the ROW, existing laydown yards where materials and equipment would be stored, temporary work areas adjacent to new TSP or LST structures, lands adjacent to the ROW boundary, and lands adjacent to new access roads. The 23-mile-long HCP Planning Area includes a 10.8-mile-long north-south portion and a 12.2-mile-long east-west portion (Figure 1-3). Figure 1-4 provides a more detailed map of the HCP Planning Area.

Construction of the Cross Valley Line in the north-south portion of the HCP Planning Area would occur on the vacant eastern half of the existing 150-foot-wide ROW. The east-west portion of the Cross Valley Line would be constructed within a new 100-foot-wide ROW purchased by SCE. SCE has established different types of ROW agreements (primarily easement agreements, grant deeds, franchises, and temporary entry permits) with the private landowners to access SCE facilities and to construct the new Cross Valley Line.

The Planning Area for the Cross Valley Line HCP consists of the following areas:

- **1,000-Foot-Wide Corridor along the Transmission Line.** The HCP Planning Area includes property within 500 feet on each side of the ROW centerline, for a total width of 1,000 feet, along the 23-mile proposed Cross Valley Line. The 1,000-foot-wide corridor includes the existing, 150-foot-wide ROW for the north-south 10.8-mile portion of the Cross Valley Line and the new 100-foot ROW for the east-west 12.2-mile portion of the Cross Valley Line. Most direct ground-disturbing impacts from Covered Activities would be confined to the 150-foot-wide or 100-foot-wide ROW boundaries. Other effects of Covered Activities associated with the transmission line could occur within 250 feet of the ROW boundaries. To encompass this zone, the HCP Planning Area boundaries were located 425–450 feet beyond the ROW boundaries.

- **Existing Access Roads and Adjoining 250-Foot-Wide-Corridors.** To access the ROW along the transmission line, SCE construction and maintenance vehicles would use portions of 14 existing roads that extend beyond the 1,000-foot-wide corridor along the transmission line ROW. These existing access roads include paved and unimproved public and private roads less than 20 feet in width. These roads would not be widened during construction and O&M Covered Activities, but SCE could maintain the road surface within the existing road prism during the 30-year permit term. SCE determined that impacts of Covered Activities (e.g., dust generation) along these existing roads would not extend beyond 250 feet. Therefore, the HCP Planning Area would include the drivable surface and shoulders of these roads, plus land within 250 feet of road centerlines (i.e., a corridor along the centerline of these existing roads that would be at least 500 feet wide).

- **New Access Roads and Adjoining 250-Foot-Wide Corridors.** New dirt roads would be constructed to provide access to the east-west portion of the Cross Valley Line. Portions of these new roads would extend beyond the 1,000-foot-wide corridor along the transmission line ROW. The HCP Planning Area includes corridors along these portions of new access roads. New access roads would extend beyond the 1,000-foot-wide corridor in only three locations: between structures 72 and 73 and at Structures 88 and 90. These access road corridors consist of a 14-foot-wide drivable road surface, a 2-foot-wide shoulder on each side of the road, adjoining work areas used to construct the road, and all land within 250 feet of the outer edge of road shoulders or work areas. Because direct impacts would be confined to the additional work areas and new access roads, SCE anticipates that indirect effects would be limited to the 250-foot-wide area.

- **Construction Work Areas and Adjacent Land within 250 Feet.** Several work areas for construction of the Cross Valley Line, when buffered by 250 feet, would extend outside of the 1,000-foot-wide corridor described above. These locations can be found at Structures 68, 70, 79, and 87. Because direct impacts would be confined to the additional work areas, SCE anticipates that indirect effects would be limited to the adjacent 250-foot-wide area. Therefore, the HCP Planning Area would include these work areas and the land within a 250-foot-wide area from the edge of these areas.

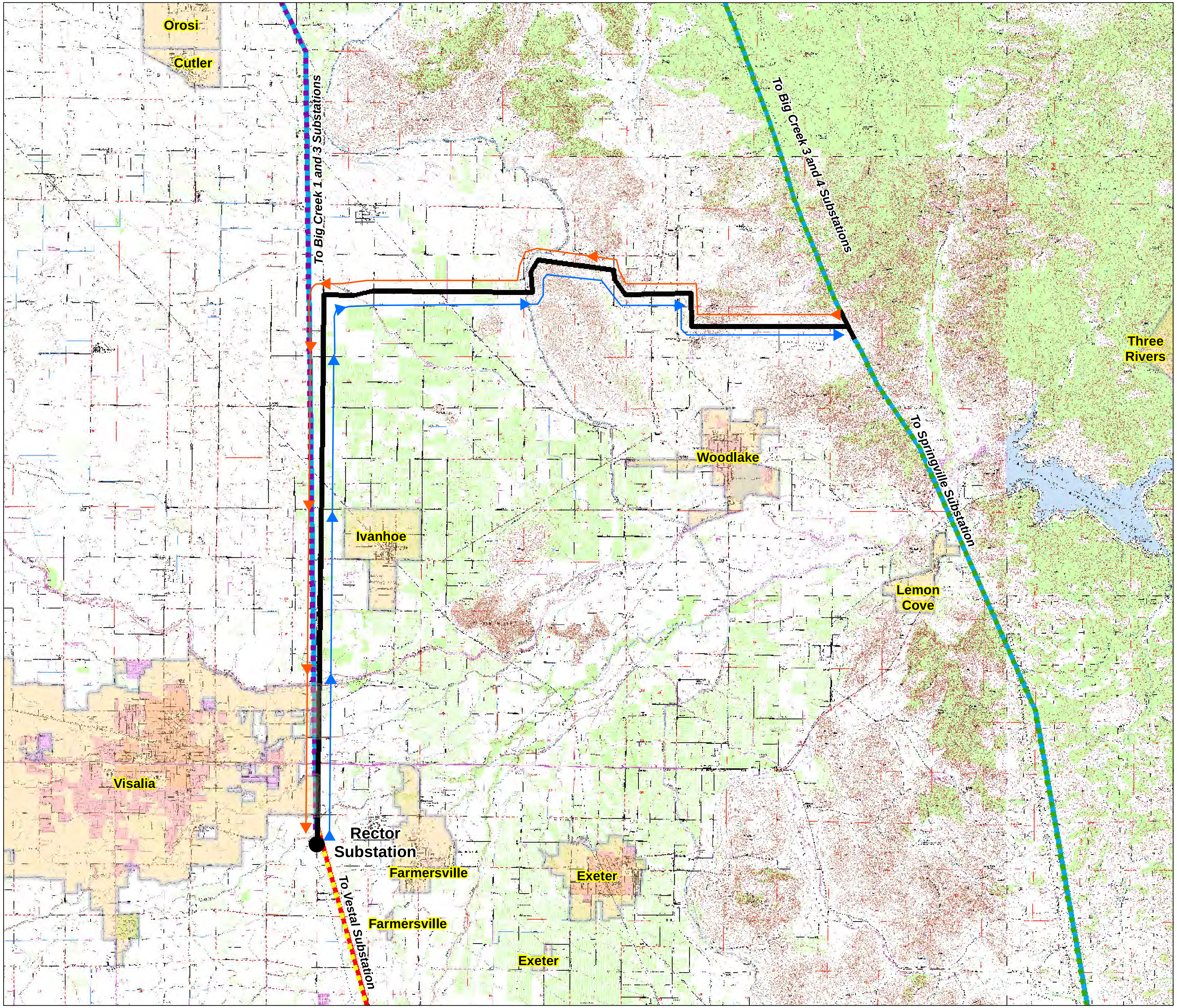
- **Existing Laydown Yards.** Two existing laydown yards that would be used for construction material and equipment storage are outside of the 1,000-foot-wide corridor along the transmission line ROW. These areas are needed to implement construction activities. For Covered Activities at existing laydown yards, SCE determined that effects could extend up to 250 feet from the laydown yard. Therefore, this adjoining land was included in the HCP Planning Area. Figure 1-4 depicts the location of the boundaries of the HCP Planning Area.

In total, the HCP Planning Area encompasses approximately 3,385 acres. Of this total, approximately 2,951 acres are located on private property within unincorporated Tulare County; however, a small portion (approximately 174 acres) is located on private property within the jurisdictional boundaries of the City of Visalia. A small portion of Federal property administered by the U.S. Bureau of Reclamation is also present where the HCP Planning Area crosses the Friant-Kern Canal. Figure 1-4 provides a more detailed map of the HCP Planning Area.

1.6 HABITAT CONSERVATION PLAN COVERED SPECIES

Species proposed for coverage are those for which the HCP provides for their conservation and management, and for which take authorization may be required during the term of the ITP. SCE identified these species based on an initial assessment of the potential effects of Covered Activities on listed species and species that could become listed during the term of the HCP. A total of 39 special-status species with the potential to occur in the HCP Planning Area (23 animals and 16 plants) were evaluated for coverage on the basis of specific criteria. Of these, 13 species met all of these criteria and are the Covered Species addressed by this HCP. Appendix A provides the evaluation through which these Covered Species were determined.

Figure 1-3
Cross Valley Line Completed Circuit



City Limits
Cross Valley Line
Rector-Springville 220 kV Circuit
Big Creek 3-Rector No. 2 220 kV Circuit
Big Creek 1 - Rector and Big Creek 3 - Rector
Big Creek 3 - Springville and Big Creek 4 - Springville
Big Creek 4 - Springville
Rector - Vestal 1 and Rector - Vestal - 2

N
W E
S

0 1 2 4 Miles

Source: ESRI 2010; SCE 1/7/2013

Features depicted herein are planning level accuracy, and intended for informational purposes only. Distances and locations may be distorted at this scale. Always consult with the proper legal documents or agencies regarding such features.

SCE Cross Valley Line Transmission Project Habitat Conservation Plan

SOUTHERN CALIFORNIA EDISON
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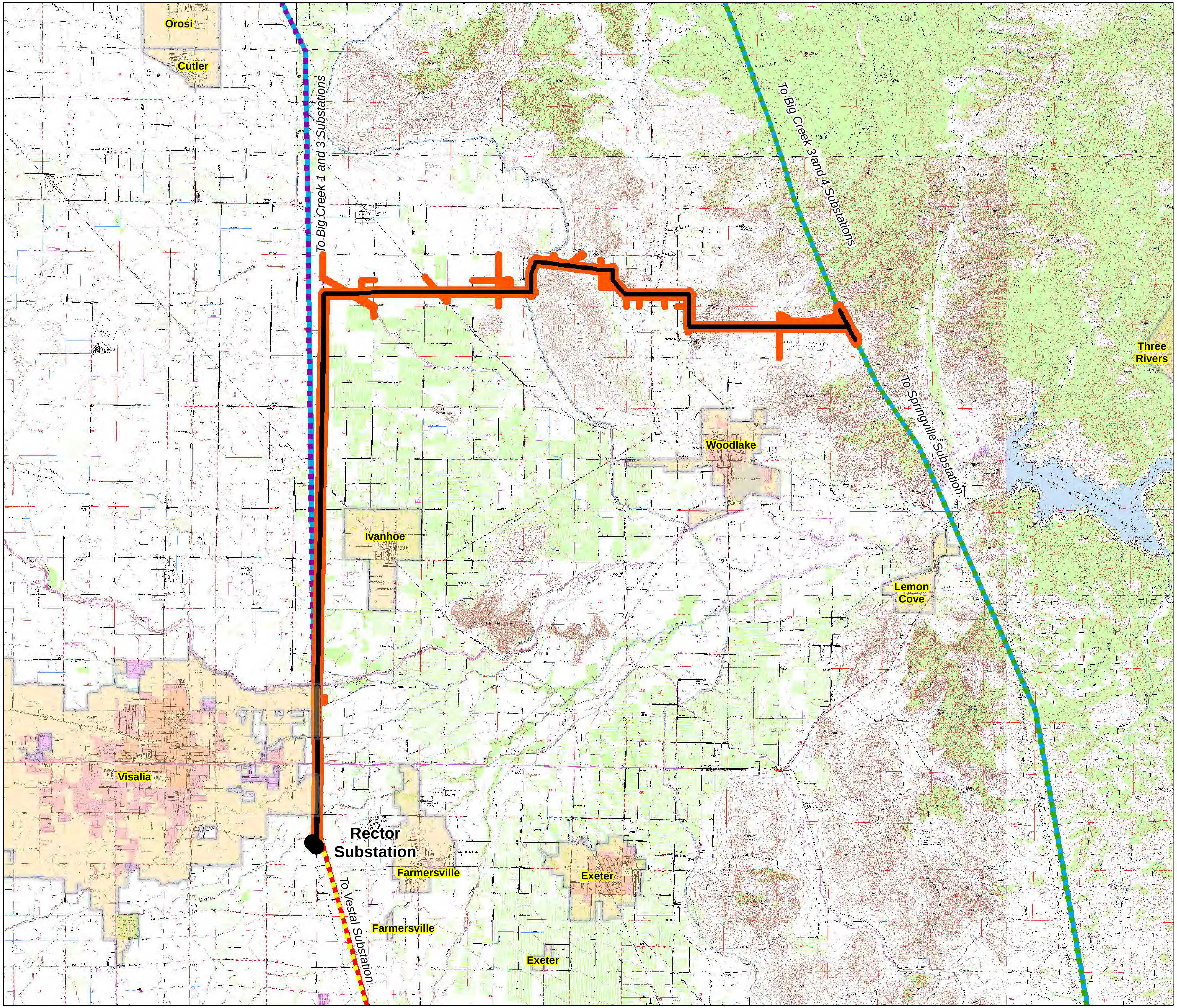
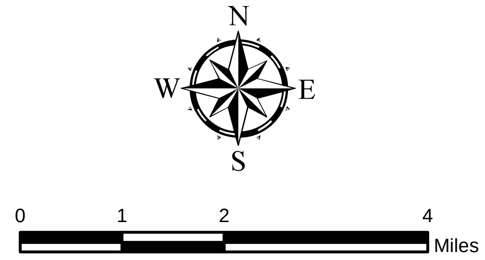


Figure 1-4
HCP Planning Area Overview Map

Existing Substation
City Limits
HCP Planning Area
Cross Valley Line
Big Creek 1 - Rector and Big Creek 3 - Rector
Big Creek 3 - Springville and Big Creek 4 - Springville
Big Creek 4 - Springville
Rector - Vestal 1 and Rector - Vestal - 2



Source: ESRI 2010; SCE 1/7/2013

Features depicted herein are planning level accuracy, and intended for informational purposes only. Distances and locations may be distorted at this scale. Always consult with the proper legal documents or agencies regarding such features.

SCE Cross Valley Line Transmission Project Habitat Conservation Plan

SOUTHERN CALIFORNIA EDISON
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Table 1-1 lists the 13 wildlife and plant Covered Species for which SCE is requesting an ITP. The Covered Species include the two species (Hoover's spurge and San Joaquin Valley Orcutt grass) that have Federally designated critical habitat within the HCP Planning Area. The potential for adverse modification of critical habitat for Hoover's spurge and San Joaquin Valley Orcutt grass is analyzed in Chapter 4, Impact Assessment and Level of Take.

Table 1-1
Habitat Conservation Plan Covered Species for the Cross Valley Line

Scientific Name	Common Name	Status
Invertebrates		
Branchinecta lynchi	Vernal pool fairy shrimp	Federal Threatened
Lepidurus packardi	Vernal pool tadpole shrimp	Federal Endangered
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	Federal Threatened (recently proposed for delisting)
Amphibians		
Ambystoma californiense	California tiger salamander	Federal Threatened State Threatened
Spea hammondii	Western spadefoot toad	State Species of Special Concern
Birds		
Empidonax traillii brewsteri	Little willow flycatcher[1]	California Endangered
Empidonax traillii extimus	Southwestern willow flycatcher[1]	Federal Endangered California Endangered
Vireo bellii pusillus	Least Bell's vireo	Federal Endangered State Endangered
Athene cunicularia	Burrowing owl	California Species of Special Concern
Mammals		
Vulpes macrotis mutica	San Joaquin kit fox	Federal Endangered State Threatened
Plants		
Chamaesyce hooveri	Hoover's spurge[2]	Federal Threatened CRPR[3] 1B
Orcuttia inaequalis	San Joaquin Valley Orcutt grass[2]	Federal Threatened California Endangered CRPR[3] 1B
Eryngium spinosepalum	Spiny-sepaled button-celery	CRPR[3] 1B

Notes:
[1] The range of the two willow flycatcher subspecies overlap and individuals cannot be distinguished in the field, so both subspecies were included as Covered Species.
[2] Federally designated critical habitat for these species exists within the HCP Planning Area.
[3] The former California Native Plant Society lists have become the California Rare Plant Ranks (CRPRs).
Source: Data provided by SCE and compiled by AECOM in 2013

These Covered Species are expected to be named in the ITP. In exchange, the HCP includes avoidance, minimization, and mitigation measures for each species and provisions for the long-term conservation and management of all 13 species, whether or not they are currently Federally listed as threatened or endangered. Accordingly, any Federally nonlisted species addressed by the HCP's conservation strategy would not require additional conservation within the HCP Planning Area should that species become listed on the Federal ESA during the permit term.

ESA Section 9(a)(2)(B) makes it unlawful to remove and reduce to possession plants on lands under Federal jurisdiction, or to remove, cut, dig up, damage, or destroy Federally listed plants in any area in knowing violation of any law or regulation of any state. Although this ESA section specifically prohibits certain activities that directly destroy or damage Federally listed plants, the "take" prohibition in Section 9(a)(1)(B), including the regulatory prohibitions against "harm" and "harassment," apply only to fish and wildlife.

Take of listed plant species is not prohibited under the ESA and therefore is not authorized under the ITP. Plant Covered Species are listed in the ITP in recognition of the conservation measures and benefits provided for such plant species under the HCP. For this reason, SCE requests assurances for these plant Covered Species under USFWS's "No Surprises" assurances rule (Title 50, Section 17.22[b][5]) of the Code of Federal Regulations [50 C.F.R. 17.22(b)(5)] and 50 C.F.R. 17.32[b][5]). Under the "No Surprises" rule, USFWS may provide assurances that it would not require the commitment of additional land, water, or financial compensation or impose additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the HCP's Covered Species without the permittee's consent, as long as the HCP is being properly implemented and adequately covers the species included in the conservation plan. In addition, during its internal Section 7 consultation process, USFWS must consider whether its decision to issue this ITP would jeopardize the continued existence of listed species (including plant species) or destroy or adversely modify critical habitat. Thus, HCPs typically offer conservation benefits for plants and regulatory assurances to the permit holders that include plants included in their HCPs. Therefore, SCE seeks to have the plants listed in Table 1-1 included as Covered Species in this HCP.

1.7 REGULATORY FRAMEWORK

1.7.1 FEDERAL ENDANGERED SPECIES ACT

Congress enacted the ESA in 1973 to protect plant and animal species that are in danger of or threatened with extinction. ESA Section 9 and its implementing regulations prohibit the take of any fish or wildlife species that is Federally listed as threatened or endangered without prior approval under either Section 7 or Section 10(a)(1)(B) of the ESA. The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 50 C.F.R. 17.3 further defines the term "harass" in the definition of "take" in the ESA to include an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to significantly disrupt normal behavioral patterns, which include but are not limited to breeding, feeding, or sheltering. "Harm" in this definition means any act that actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. This HCP analyzes the potential of each Covered Activity to result in either harassment or harm of Covered Species over the proposed 30-year term of the ITP, as applicable.

Section 9(a) of the ESA also makes it unlawful to remove and reduce to possession plants on lands under Federal jurisdiction, or to remove, cut, dig up, damage, or destroy Federally listed plants in any area in knowing violation of any law or regulation of any state. Although Section 9 specifically prohibits certain activities that directly destroy or damage plants, the "take" prohibition in Section 9(a)(1)(B) discussed above, including the regulatory prohibitions against "harm" and "harassment," applies only to fish and wildlife. As a result, Section 10(a)(1)(B) does not authorize issuing ITPs to take plants. Because USFWS must consider during the internal Section 7 consultation process whether its issuance of the ITP would jeopardize the continued existence of listed species (including plant species) or destroy or adversely modify critical habitat, HCPs typically offer conservation benefits for plants and regulatory assurances to ITP holders that include plants in their HCPs. Therefore, SCE seeks to have plants included as a Covered Species in this HCP.

Section 10(a) of the ESA establishes a process for obtaining an ITP, which authorizes non-Federal entities to incidentally take Federally listed wildlife or fish subject to certain conditions. Incidental take is defined by the ESA as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." Preparation of a conservation plan, generally referred to as an HCP, is required for all Section 10(a)(1)(B) permit applications. USFWS and the National Marine Fisheries Service have joint authority under the ESA for administering the incidental take program. The species at issue in this HCP are exclusively within the jurisdiction of USFWS. The regulatory standards under ESA Section 10(a)(1)(B) are that the effects of authorized incidental take must be minimized and mitigated to the maximum extent practicable, that the effects of the authorized incidental take also would not appreciably reduce the likelihood of the survival and recovery of the species in the wild, and that adequate funding for a plan must be ensured.

Section 7 of the ESA requires all Federal agencies to ensure that any discretionary actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any species listed under the ESA, or to result in the destruction or adverse modification of its designated critical habitat. The issuance of a Section 10 ITP is a discretionary Federal action by USFWS. Consequently, in conjunction with issuing a permit, USFWS must conduct an internal Section 7 consultation on the proposed HCP and proposed permit action. The internal consultation is conducted after an HCP is developed by a non-Federal entity and submitted for formal processing and review. The provisions of ESA Sections 7 and 10 are similar, but Section 7 requires consideration of several factors not explicitly required by Section 10. Specifically, Section 7 requires consideration of the indirect effects of a project, effects on Federally listed plants, and effects on designated critical habitat. Consequently, HCPs must also include the analysis of indirect effects of the Covered Activities, direct and indirect effects on listed plants, and an adverse-modification analysis of any critical habitat. The internal Section 7 consultation terminates with the completion of a biological opinion prepared by USFWS, which provides USFWS's determination of whether issuing the proposed permit and implementing the HCP might result in jeopardy to any listed species or adversely modify designated critical habitat.

1.7.2 Section 10 Process—Habitat Conservation Plan Requirements and Guidelines

The process for obtaining an ITP has three general phases: the HCP development phase, permit application processing, and HCP implementation.

During the HCP development phase, the project applicant prepares a plan that integrates the proposed project or activity with the protection of listed species. ESA Section 10 and implementing regulations require that any HCP submitted in support of an ITP application include the following information:

- A complete description of the activity to be permitted
- The common and scientific names of the species to be covered by the permit
- Impacts likely to result from the proposed taking of the species for which permit coverage is requested
- Measures that would be implemented to monitor, minimize, and mitigate impacts; funding that would be made available to undertake such measures; and procedures to deal with unforeseen circumstances
- Alternatives to the proposed taking that were considered and the reasons that such alternatives are not proposed to be used
- Additional measures that USFWS may require as necessary or appropriate for purposes of the plan

The HCP development phase concludes and the permit processing phase begins when the project applicant submits a complete application package to USFWS. A complete application package consists of the following elements:

- A draft HCP document
- A completed permit application form
- An application fee from the project applicant
- A draft National Environmental Policy Act (NEPA) document

In addition, a draft implementing agreement may be included.

If USFWS's review of the permit application documents finds them to be statutorily complete, USFWS will publish a notice of availability of the NEPA document and receipt of a permit application in the *Federal Register* to allow for public comment. USFWS then prepares an intra-service Section 7 biological opinion. After considering public comments, USFWS prepares a set of findings, which evaluate the Section 10(a)(1)(B) permit application based on permit issuance criteria (see below).

Preparation of an environmental assessment (EA) or environmental impact statement (EIS) is typically required for the USFWS record of compliance with NEPA. An implementing agreement may also be prepared for the ITP. An ESA Section 10 ITP requires a determination by USFWS that all requirements for ITP issuance criteria have been met. Statutory and regulatory criteria for issuing the permit specify the following:

- Taking would be incidental.
- Impacts of incidental take would be minimized and mitigated to the maximum extent practicable.

- Adequate funding for the HCP and procedures to handle unforeseen circumstances would be provided.
- Taking would not appreciably reduce the likelihood of survival and recovery of the species in the wild.
- The project applicant would provide additional feasible measures that USFWS requires as being necessary or appropriate.
- USFWS has received assurances, as may be required, that the HCP would be implemented.

In June 2000, USFWS and the National Marine Fisheries Service adopted the "Five-Point Policy" designed to clarify elements of the HCP program as it relates to biological goals, monitoring, adaptive management, permit duration, and public participation (Title 65, page 35242 of the *Federal Register* [65 Fed. Reg. 35242], June 1, 2000). The Five-Point Policy directs that the following elements be addressed in the development of all HCPs:

- **Biological Goals and Measurable Objectives**: HCPs are required to define the biological goals and objectives that the plan is intended to achieve. Biological goals and measurable objectives clarify the purpose and direction of the plan's conservation program, including specific measurable targets that the plan is intended to meet. The biological goals and measurable objectives of the Cross Valley Line HCP are described in Chapter 5, Conservation Strategy.
- **Monitoring**: Monitoring is a mandatory element of all HCPs. HCPs are required to include provisions for monitoring actual effects, monitoring to gauge the effectiveness of the plan in meeting the biological goals and objectives, and verification that the terms and conditions of the plan are being implemented properly. The Cross Valley Line HCP monitoring plan is described in Chapter 5, Conservation Strategy.
- **Adaptive Management**: The Five-Point Policy encourages the inclusion of adaptive management strategies in HCPs in appropriate circumstances to address uncertainty about species covered by a plan. The agencies describe adaptive management as a "method for examining alternative strategies for meeting measurable biological goals and objectives, and then, if necessary, adjusting future conservation management actions according to what is learned." As described in Chapter 5, Conservation Strategy, the Cross Valley Line HCP conservation strategy would mitigate project impacts through on-site restoration, by purchasing mitigation credits at USFWS-approved conservation banks by preserving in perpetuity compensatory habitat for Covered Species at a USFWS-approved "turnkey" mitigation site, or through other USFWS-approved mechanisms. The conservation banks monitor and manage species habitat using adaptive management strategies.
- **Permit Duration**: Consistent with the Five-Point Policy, USFWS considers several factors in determining the term of an ITP. For instance, the agency takes into account the expected duration of the activities proposed for coverage and the anticipated positive and negative effects on Covered Species that would likely occur during the course of plan implementation. The agency also factors in the level of scientific and commercial data underlying the proposed conservation program, the length of time necessary to implement and achieve the benefits of the conservation program, and the extent to which the program incorporates adaptive management strategies. As discussed in Section 1.4, Permit Term, the proposed duration of the Cross Valley Line HCP ITP is 30 years.

- **Public Participation**: Under the Five-Point Policy, the Federal fish and wildlife agencies have sought to increase public participation in the HCP process, including greater opportunities for the public to assess, review, and analyze HCPs and associated NEPA documentation. As provided by the Five-Point Policy, a minimum 60-day public comment period is appropriate for most HCPs. The Five-Point Policy also encourages the use of informational meetings and/or advisory committees. The public is notified of USFWS's permit decisions by means of a second *Federal Register* notice. During the permit postissuance phase, the permittee (the permit holder) implements the HCP, by monitoring the Covered Activities' effects, funding and monitoring the conservation plan, reporting to USFWS, and implementing other permit terms and conditions. USFWS monitors the permittee's compliance with the HCP permit terms and conditions and the long-term progress and success of the HCP.

1.7.3 Section 10 Assurance Requested, No Surprises

The Federal "No Surprises" rule became effective on March 25, 1998 (63 Fed. Reg. 8859). It provides assurances to Section 10 permit applicants that no additional money, commitments, or restriction of land or water would be required should unforeseen circumstances requiring additional mitigation arise once the ITP is in place. The No Surprises rule states that if a permittee is properly implementing an HCP that has been approved by USFWS, no additional commitment of resources beyond that already specified in the HCP would be required. This HCP provides for "changed circumstances" as required under the No Surprises rule. Changed circumstances are those affecting a species or geographic area covered by a conservation plan or agreement that can reasonably be anticipated by the developers of the plan or implementing agreement and USFWS and that can be planned for. If during SCE's implementation of the HCP, including provisions to deal with changed circumstances, USFWS were to determine that SCE had met or was meeting the permit conditions and provisions, no further mitigation or compensation would be required by SCE to address impacts on Covered Species associated with changed circumstances, except as provided under terms of the HCP. Unforeseen circumstances and changed circumstances for this HCP are described in Chapter 5, Conservation Strategy, of this HCP.

1.7.4 National Environmental Policy Act

NEPA requires that Federal agencies analyze the environmental consequences of their actions (in this instance, issuance of an ITP) and include public participation in the planning and implementation of their actions. NEPA compliance is obtained through one of three actions:

- Preparation of an EIS (generally prepared for high-effect HCPs)
- Preparation of an EA (generally prepared for moderate-effect HCPs)
- A categorical exclusion (allowed for low-effect HCPs)

USFWS will issue public comments on the NEPA document issued for this project. The NEPA process helps Federal agencies make informed decisions about the environmental consequences of their actions and ensures that measures to avoid and minimize impacts are considered.

It is anticipated that USFWS will prepare an EA and will be able to reach a finding of no significant impact for the Cross Valley Line HCP and permit action. It is also anticipated that implementing the HCP would not result in significant environmental impacts. Furthermore, substantial public controversy is not anticipated for this utility reliability project.

1.8 HABITAT CONSERVATION PLAN ORGANIZATION

This HCP is organized as follows:

- Chapter 1, Introduction and Background, introduces the Cross Valley Line, names the permit applicant and proposed permit term, identifies the boundaries of the HCP Planning Area, identifies the HCP Covered Species, discusses the regulatory framework related to this HCP, and outlines the organization of the HCP.
- Chapter 2, Covered Activities, describes the activities proposed to be covered by the ITP (the HCP Covered Activities). These Covered Activities include construction of the Cross Valley Line and future O&M activities (both routine and emergency maintenance and repairs) along the Cross Valley Line for a 30-year permit period.
- Chapter 3, Environmental Setting/Biological Resources, describes the existing environmental baseline for the HCP Planning Area and the biological resources found there. It also describes the ecology of Covered Species.
- Chapter 4, Impact Assessment and Level of Take, describes the potential impacts and take assessment for each Covered Species.
- Chapter 5, Conservation Strategy, describes this HCP's strategy for conserving each Covered Species, including the biological goals and measurable objectives; avoidance, minimization, and mitigation measures; and other measures that are part of the strategy to conserve each Covered Species.
- Chapter 6, Monitoring, Adaptive Management, and Reporting, describes the monitoring, reporting, and adaptive management of the conservation program.
- Chapter 7, Implementation, describes HCP implementation, including changed and unforeseen circumstances, funding, and the process for making changes to the HCP.
- Chapter 8, Alternatives to Take, describes the alternatives to take for each Covered Species and explains the reasons why these alternatives were not selected.
- Chapter 9, References, provides full references for each citation in the text of Chapters 1–8.
- Chapter 10, Acronyms, defines the acronyms and other abbreviations used in the text of Chapters 1–8.
- Chapter 11, Glossary, defines key terms used in the text of Chapters 1–8.
- Chapter 12, Preparers, lists the names, roles, and affiliations of the individuals who prepared the HCP.
- Appendix A, Screening of Potential Covered Species, documents the process by which special-status species were evaluated for inclusion as Covered Species.
- Appendix B, Detailed Figures of Facility Footprints and Work Areas, and Terrestrial and Aquatic Land Cover, displays the locations of facility footprints and work areas, and terrestrial and aquatic land cover for the Cross Valley Line.

- Appendix C, Noxious Weed and Invasive Plant Control Plan, describes the plan for controlling noxious weeds and invasive plants to fulfill mitigation requirements presented in the SCE San Joaquin Cross Valley Loop Transmission Line Project’s final EIR and mitigation monitoring, reporting, and compliance plan.
- Appendix D, Detailed Figures of New Access Roads and Associated Road Drainage Systems and Stormwater Diversion Structures.
- Appendix E, Nesting Bird Management Plan, provides a framework for managing and monitoring bird nesting activities during construction of the Cross Valley Line.
- Appendix F, Riparian Habitat Enhancement Plan, addresses the restoration and mitigation requirements associated with impacts on riparian species along the Cross Valley Line.
- Appendix G, Summary of Avoidance and Minimization Measures for the Cross Valley Line, lists the various measures that would be implemented to reduce impacts of the Cross Valley Line on biological resources.

2 COVERED ACTIVITIES

This chapter describes the Southern California Edison (SCE)–proposed construction Covered Activities and proposed operations and maintenance (O&M) Covered Activities associated with the SCE Cross Valley Transmission Line (Cross Valley Line) that could result in direct or indirect incidental take of Covered Species (see Chapter 1, Introduction and Background). Covered Activities may be performed by SCE employees or contractors as described in Chapter 7, Implementation. In this chapter of the habitat conservation plan (HCP), Section 2.2 describes construction Covered Activities and Section 2.3 describes O&M Covered Activities.

2.1 DEFINITIONS

Chapter 2 refers to land disturbance categories when describing the areas required for conducting Covered Activities. Land disturbance categories include: facility footprints, high disturbance work areas, and low disturbance work areas. These terms are defined below.

Facility footprints refer to areas where the ground surface would be permanently occupied by a constructed facility. These areas would be graded, compacted, and maintained clear of vegetation. Constructed facilities would include new access roads (the drivable surface, shoulder, and cut and fill slopes;[1] see Section 2.2.2), drainage/stormwater diversion structures (see Section 2.2.2.5), tubular steel pole (TSP) and lattice steel tower (LST) structure pads (see Section 2.2.4.1), and crane pads[2] (see Section 2.2.4.2). Facility footprints would be delineated in the field by SCE crews prior to starting a construction or O&M Covered Activity.

High disturbance work areas refer to areas where the ground surface would be significantly modified (graded, compacted, and revegetated) to allow for implementation of construction and O&M Covered Activities. Proposed ground disturbance in these areas is considered permanent given the extended amount of time that would be required to return areas to preexisting conditions. High disturbance work areas would include LST structure replacement work areas (see Section 2.2.4.4) and pulling-tensioning-splicing work areas in natural land cover types[3] (land cover types other than agriculture or developed) (see Section 2.2.5.2). SCE crews would delineate high disturbance work areas in the field before starting a construction or O&M Covered Activity.

Low disturbance work areas refer to areas where the ground surface would be minimally disturbed (not graded, not compacted, and revegetated) to allow for implementation of construction and O&M Covered Activities. Proposed ground disturbance in these areas is considered temporary given the short amount of time that would be required to return areas to preexisting conditions. Low disturbance work areas would include new access road work areas (see Section 2.2.2), TSP and LST structure work areas (see Section 2.2.4.1), guard pole work areas (Section 2.2.5.1), off-road travel corridors (see Section 2.2.5.1), and pulling-tensioning-splicing work areas in

[1] Cut and fill slopes would be revegetated, and thus, would not be maintained clear of vegetation (see Section 2.2.2).

[2] Portions of crane pads not overlapping TSP and LST structure pads and facility footprints of new access roads would be revegetated after construction.

[3] For the purposes of this HCP, pulling-tensioning-splicing work areas constructed within natural land cover types (land cover types other than agriculture or developed) are considered high disturbance work areas given the extended amount of time that would be required for recovery to preexisting natural conditions. Pulling-tensioning-splicing work areas constructed within agricultural land cover types are considered low disturbance work areas given that agricultural practices would resume immediately after use of these low disturbance work areas.

agricultural land cover types (see Section 2.2.5.2; see footnote 3 on page 2-1). SCE work crews would delineate low disturbance work areas in the field before starting a construction or O&M Covered Activity.

2.2 CONSTRUCTION COVERED ACTIVITIES

Construction of the Cross Valley Line would entail the following Covered Activities:

- Operation and restoration of existing laydown yards
- Construction of new access roads
- Improvement and repair of existing access roads
- Construction of transmission line structures
- Stringing of conductors and optical ground wires (OPGWs)
- Installation of storm water pollution prevention plan (SWPPP) best management practices (BMPs)

These construction Covered Activities are described are described in Sections 2.2.1 through 2.2.6, respectively, based on final plans and specifications that would guide construction. These final plans and specifications would include the boundaries of all facility footprints, high disturbance work areas, and low disturbance work areas within which SCE would confine construction Covered Activities. Appendix B presents a set of figures that displays the facility footprints, high disturbance work areas, and low disturbance work areas included in the final plans and specifications. The boundaries of all facility footprints, low disturbance work areas, and high disturbance work areas would be delineated in the field before the start of construction Covered Activities. Construction Covered Activities may not occur outside these delineated boundaries without the prior approval of the SCE construction manager and regulatory agencies, as required by the HCP and incidental take permit (ITP) terms and conditions.

Table 2-1 summarizes land disturbance estimates associated with construction Covered Activities. Land disturbance estimates are summarized for each type of facility footprint, high disturbance work area, and low disturbance work area. However, these areas (facility footprints, low disturbance work areas, and low disturbance work areas) sometimes overlap spatially. Thus, the total acres of land disturbance for each facility footprint, high disturbance work area, and low disturbance work area do not equal the sum of the acres of land disturbance caused by each Covered Activity. Table 2-1 provides the total area of land disturbance for each land disturbance category to account for overlap between various facility footprints, high disturbance work areas, and low disturbance work areas. The following subsections describing construction Covered Activities provide the basis for acreages reported in Table 2-1.

Some construction Covered Activities would involve removing construction waste and plant, soil, or rock material. Disposal of materials is not an activity covered by this HCP (i.e., not a Covered Activity) and would occur outside of the HCP Planning Area. Materials would be transported to existing disposal facilities that are licensed to receive them. The potential effects on Federally listed species resulting from disposal of materials at these facilities have been analyzed and permitted during previous environmental review. All construction activities would involve using vehicles to transport personnel, equipment, and materials in the HCP Planning Area.

Table 2-1 **Acreage of Land Disturbance for Construction Covered Activities**			
Areas Associated with Covered Construction Activities Resulting in Land Disturbance	**Acreage by Land Disturbance Category (acres east of FKC[1] in parentheses)**		
	Facility Footprint (graded and maintained clear of vegetation)	**High Disturbance Work Area (graded, compacted, and revegetated)**	**Low Disturbance Work Area (not graded, not compacted, and revegetated)**
New access roads, including drivable surface, shoulders, and cut/fill slopes[2] (Section 2.2.2)	52.02 (49.23)		
Road drainage system/stormwater diversion structures (Section 2.2.2.5)	0.51 (0.50)		
TSP and LST structure pads (Section 2.2.4.1)	15.72 (11.42)		
Crane pads (Section 2.2.4.2)[3]	0.80 (0.80)	0.80 (0.80)	
LST structure replacement work areas (Section 2.2.4.4)		0.92 (0.92)	
Pulling-tensioning-splicing work areas in natural land cover (Section 2.2.5.2)		13.16 (13.16)	
Pulling-tensioning-splicing work areas in agriculture land cover (Section 2.2.5.2)			15.73 (2.18)
General disturbance areas (i.e., road work areas [Section 2.2.2])			55.97 (31.28)
TSP and LST structure work areas (Section 2.2.4.1)			52.54 (25.81)
Guard pole work areas (Section 2.2.5.1)			17.54 (3.81)
Off-road travel corridors (Section 2.2.5.1)			0.41 (0.24)
Total Acreage per Land Disturbance Category (Excluding Overlap)[4]	*69.05* *(61.95)*	*14.08* *(14.08)*	*142.19* *(63.32)*
Total Acreage per Land Disturbance Category (Including Overlap)[5]	**42.29** **(35.68)**	**10.99** **(10.99)**	**100.25** **(39.25)**
TOTAL LAND DISTURBANCE ACREAGE[6]	**153.54** **(85.93)**		

Notes: LST = lattice steel tower; TSP = tubular steel pole

1 FKC = Friant-Kern Canal

2 Cut/fill slopes would be revegetated after construction.

3 Portions of crane pads not overlapping TSP and LST structure pads and facility footprints of new access roads would be revegetated after construction. Approximately 0.02 acre associated with crane pads would not overlap TSP and LST structure pads or facility footprints of new access roads.

4 Acreages do not account for overlap between facility footprints, high disturbance work areas, and low disturbance work areas. Facility footprints, low disturbance work areas, and low disturbance work areas sometimes overlap spatially; therefore, these totals overestimate the actual land disturbance associated with construction Covered Activities.

5 Acreages account for overlap between facility footprints, high disturbance work areas, and low disturbance work areas.

6 Total land disturbance equals the sum of "Total Acreage per Land Disturbance Category (Including Overlap)" and accounts for overlap between facility footprints, high disturbance work areas, and low disturbance work areas.

Source: Data compiled by SCE 2013

Standard planning and design measures and general construction avoidance and minimization measures (AMMs) (as described in Table 2-2) are also covered by this HCP. SCE and its contractors would implement these measures during construction Covered Activities to avoid and reduce the effects on natural resources, including Covered Species. A comprehensive list of planning and design, construction, O&M, and habitat- and species-specific AMMs that would be implemented during Cross Valley Line Covered Activities is provided in Appendix G. In addition to these AMMs, SCE would implement the mitigation measures set forth in the final environmental impact report for the San Joaquin Cross Valley Loop Transmission Line Project, certified by the California Public Utilities Commission in February 2010. SCE would also comply with other State and local laws, including developing a SWPPP, and would obtain all necessary State and local permits to construct.

Table 2-2
Standard Planning-Design Measures and General Avoidance and Minimization Measures for Construction Covered Activities

Number	Title	Description
Standard Measures for Planning and Design (PD)		
PD-1	Inventory Sensitive Biological Resources to Inform Project Planning and Design	Biological resources will be inventoried during project planning and design. These resources will include land cover types, waters of the State and U.S., and reconnaissance surveys for special-status species.
PD-2	Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources	To the extent feasible, the final project design shall minimize impacts on Covered Species (including effects on suitable habitat) that have been identified in the HCP Planning Area (e.g., by designing TSPs and LSTs to avoid occupied habitat).
PD-3	Design Roads to Avoid Sediment Loading to Surface Waterways	For all segments of new access roads that would be within 300 feet of an existing surface water channel (including irrigation ditches where no berm or levee is currently in place) and traverse a ground slope greater than 2 percent, the following protective measures shall be installed: • As needed, permanent access roads shall be in-sloped. • TSPs and LSTs shall be located to avoid waterways to the extent feasible.
General Avoidance and Minimization Measures for Construction (C)		
C-1	Conduct Environmental Awareness Training for Workers	SCE workers and SCE contract workers must undergo training through the Worker Environmental Awareness Program (WEAP) before they are allowed on the construction site and before they begin implementing Covered Activities. This training includes a description of biological resources that could occur within the HCP Planning Area; laws and regulations that protect these resources; environmental requirements of the HCP, including all relevant conservation measures and the environmental responsibilities of each worker; and consequences if requirements are not met. Copies of the final HCP and the incidental take permit (ITP) must be on-site and easily available to monitors and all workers implementing HCP Covered Activities. Upon completion of the WEAP, workers shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to the agencies upon request. SCE qualified biological monitors will conduct the WEAP training and be on-site daily to ensure compliance with the HCP and AMMs.

Table 2-2 Standard Planning-Design Measures and General Avoidance and Minimization Measures for Construction Covered Activities		
Number	**Title**	**Description**
C-2	Implement Nesting Bird Avoidance	A Nesting Bird Management Plan has been developed and reviewed by CDFW and USFWS (see Appendix E). This plan details survey and buffer area requirements for nesting birds during implementation of the HCP Covered Activities. SCE and/or its contractors shall implement the following measures to avoid impacts on nesting raptors and other migratory birds for activities that are scheduled during the breeding season (February 1 through August 31): • No more than 2 weeks before land disturbance begins, a qualified wildlife biologist will conduct preconstruction surveys of all potential nesting habitat within 500 feet of the land disturbance sites. • If active nests are not identified, no further action is necessary. If active nests are identified during preconstruction surveys, a no-disturbance buffer will be created around active raptor nests and nests of other migratory birds during the breeding season, or until it is determined that all young have fledged. Typical buffers are 500 feet for raptors and 250 feet for other nesting birds (e.g., waterfowl, and passerine birds). The size of these buffer zones and types of construction activities that are allowed in these areas could be further modified in coordination with CDFW and USFWS and will consider existing noise and disturbance levels in the HCP Planning Area near the proposed ground disturbance site.
C-3	Map Environmentally Sensitive Areas	There will be formal designation of Environmentally Sensitive Areas on the project's database for avoidance during implementation of the construction Covered Activities. Weekly Environmentally Sensitive Area maps will be created and distributed to the construction and maintenance crews to illustrate resource areas and construction requirements within those areas. The boundaries of the construction footprint as well as Environmentally Sensitive Areas will be delineated in the field through the placement of high-visibility flagging, stakes, and/or fencing.
C-4	Restrict Vehicle Speeds and Travel	SCE workers and SCE contractors' vehicles will maintain a daytime speed limit of 20 miles per hour (mph) in the HCP Planning Area. Nighttime vehicle traffic will be limited to emergencies. If nighttime travel is necessary, the speed limit shall be reduced to 10 mph. Off-road construction travel in the HCP Planning Area that is not specifically identified as a construction Covered Activity will be prohibited.
C-5	Prohibit Pets	Pets are prohibited by SCE personnel and contractors during Covered Activities within the HCP Planning Area over the term of the permit.
C-6	Implement Noxious Weed and Invasive Plant Control Plan	SCE will implement a project-specific Noxious Weed and Invasive Plant Control Plan during the construction period (Appendix C). This plan is consistent with standard Best Management Practices. The plan addresses any required cleaning of vehicles to minimize spread of noxious weeds and invasive plants.
C-7	Implement Fire Prevention and Control Plan	A Fire Prevention and Control Plan will be developed and applied during Covered Activity implementation to prevent wildfires and control wildfires if started. The fire plan includes the following: • SCE and/or its contractors will have water tanks and/or water trucks sited/available in the HCP Planning Area for fire protection. • All construction and maintenance vehicles will have fire suppression equipment. • Construction personnel will be required to park vehicles away from dry vegetation. • Prior to implementation of a construction Covered Activity, SCE will contact and coordinate with the California Department of Forestry and Fire Protection (CAL FIRE) and applicable local fire departments (i.e., Tulare County, City of Visalia, and City of Farmersville) to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks if water trucks are not used.

Table 2-2 Standard Planning-Design Measures and General Avoidance and Minimization Measures for Construction Covered Activities		
Number	**Title**	**Description**
		• SCE will submit verification of its consultation with CAL FIRE and the local fire departments to the CPUC. • All diesel- and/or gasoline-operated engines, both stationary and mobile, and all flues used in any construction Covered Activities and camp operations will be equipped with spark arresters. Spark arresters are not required on equipment powered by exhaust-driven turbo-charged engines or motor vehicles equipped with a maintained muffler as defined in the California Public Resources Code (PRC), Sections 4442 and 4443.
C-8	Restrict Equipment Fueling and Maintenance near Waterways	No fueling or maintenance of vehicles or equipment will occur within 250 feet of vernal pool or aquatic habitats.
C-9	Control Erosion near Waterways and Suitable Habitat for Covered Species	Erosion control measures will be implemented where necessary and prior to any land disturbance, to reduce erosion and avoid additional sedimentation into jurisdictional waters of the U.S. and waters of the State, including drainages and seasonal wetlands, as well as habitat occupied by Covered Species when Covered Activities have the potential to cause soil erosion. See Section 2.2.6., Installation of Storm Water Pollution Prevention Plan Best Management Practices, for more information.
C-10	Remove Trash	All food-related trash and microtrash (e.g., nuts, bolts, and wires) will be disposed of in closed containers and removed daily from the HCP Planning Area.
C-11	Construct Locking Gates at Strategic Locations On Access Roads	Gates will be placed at strategic locations along access roads in consultation with landowners. These gates will be locked to discourage public access to the HCP Planning Area via the transmission line access roads.

Notes: AMM = avoidance and mitigation measure; CAL FIRE = California Department of Forestry and Fire Protection; CDFW = California Department of Fish and Wildlife; CPUC = California Public Utilities Commission; HCP = habitat conservation plan; ITP = incidental take permit; LST = lattice steel tower; mph = miles per hour; O&M = operations and maintenance; PRC = California Public Resources Code; SCE = Southern California Edison; TSP = tubular steel pole; USFWS = U.S. Fish and Wildlife Service; WEAP = Worker Environmental Awareness Program

Source: Data compiled by SCE in 2013

2.2.1 Operation and Restoration of Existing Laydown Yards

During implementation of the construction Covered Activities, SCE would use two existing laydown yards in the HCP Planning Area: the Ivanhoe and Road 156 Laydown Yards (see Appendix B). The Ivanhoe Laydown Yard measures approximately 1,286 feet by 987 feet (24 acres) and is located just south of the St. John's River within the city of Visalia. The Road 156 Laydown Yard measures approximately 693 feet by 532 feet (10 acres) and is located in the east-west portion of the HCP Planning Area west of the Friant-Kern Canal. These existing laydown yards are fenced and covered with gravel. SCE constructed both laydown yards in 2010 as part of the Big Creek Rebuild project, and currently uses both for construction offices and to store construction equipment and structures.

The laydown yards would be used throughout the Cross Valley Line construction period. Operation of the laydown yards also would include the storage, fueling, landing, and takeoff of helicopters.

The yards may be left by SCE in their current conditions for use by SCE or the landowners after construction of the Cross Valley Line. At the landowners' discretion, however, the laydown yards may be restored back to their previous land cover. Restoration would involve removing fences, other structures, and gravel, and plowing the area to remove compaction. Removed materials would be reused or disposed of at a licensed landfill. The landowners would be responsible for planting any agricultural land cover.

2.2.2 Construction of New Access Roads

Eight miles of new, unpaved access roads would be constructed in the east-west portion of the HCP Planning Area to provide access to the new transmission line structures during construction and during subsequent O&M over the 30-year ITP term (see Appendix B). Of these new roads, 7 miles would be constructed east of the Friant-Kern Canal and the remaining mile would be constructed west of the canal.

As discussed in Chapter 1, Introduction and Background, the north-south portion of the HCP Planning Area is located within an existing transmission line corridor that is shared with the constructed Big Creek Rebuild Project. Access roads required for the north-south portion of the Cross Valley Line already exist; no new access roads would be constructed to implement construction Covered Activities within the north-south portion of the HCP Planning Area.

Each new, unpaved access road would consist of up to four distinct areas, all located within the facility footprint:

(1) **Drivable surface.** All new access roads would have a 16-foot-wide drivable surface.

(2) **Shoulders.** All new access roads would have shoulders (constructed as part of the road) on both sides of the drivable surface. Each shoulder would be a 2-foot-wide transitional zone from the drivable surface to a cut/fill slope (also considered part of the road) or the natural terrain adjacent to the road. Although the surface of each shoulder generally would include a 6-inch-high berm, in some locations the shoulder surface would be nearly level, would slope away from the road, or would consist of an earthen swale. (Earthen swales are described below in Section 2.2.2.5, Installation of Road Drainage Systems and Stormwater Diversion Structures.)

(3) **Cut and fill slopes.** In the rolling and hilly topography east of the Friant-Kern Canal, existing slopes adjacent to a new road's shoulder/drivable surface would be cut upslope, and that fill would be placed downslope of the road's surface. This would result in a level drivable surface and shoulder, with a "cut slope" on the upslope side and a "fill slope" on the downslope side of the road. Most cut and fill slopes would be constructed with a 2:1 slope (horizontal:vertical); the widths and lengths of the cut and fill would vary with topography. The maximum vertical height of cut and fill slopes would be 30 feet.

(4) **Permanent drainage system and stormwater diversion structure**. Permanent drainage systems and stormwater diversion structures may be installed to minimize erosion damage to access roads from excess rainwater runoff. Most drainage systems and stormwater diversion structures would be located in the road surface, the shoulder, or the cut/fill slopes. However, some of these drainage systems and stormwater diversion structures would extend beyond the facility footprints of new access roads. See Section 2.2.2.5, Installation of Road Drainage Systems and Stormwater Diversion Structures, for additional detail regarding these systems and structures.

Based on final plan drawings, the facility footprint of the 8 miles of new access roads (drivable surface, shoulder, cut and fill slopes, and drainage systems and stormwater diversion structures) would be 52.02 acres. Of this total, 49.23 acres would be located east of the Friant-Kern Canal (Table 2-1).

Low disturbance work areas extending beyond the facility footprint of new access roads would be required to facilitate construction of these roads. Low disturbance work areas for new access roads would generally be 12–50 feet wide and would be located in nearly continuous corridors along both sides of the access road facility footprint. Low disturbance work areas for access roads would not be graded or compacted, and would be revegetated after construction of the new roads. Based on final plan drawings, low disturbance work areas for new access road construction would total approximately 55.97 acres. Of this total, 31.28 acres would be located east of the Friant-Kern Canal. Acreages of low disturbance work areas for access road construction are included within the acreage reported for "general disturbance areas" in Table 2-1.

Facility footprints and low disturbance work areas for new access roads would be delineated before construction of these roads. New access roads would be constructed in six steps:

- Clearing and grubbing
- Rough grading
- Blasting
- Finish grading
- Installation of road drainage systems and stormwater diversion structures
- Revegetation

These steps used to construct new access roads are described in the following subsections.

2.2.2.1 CLEARING AND GRUBBING

Clearing and grubbing removes aboveground vegetation and belowground roots, respectively. Clearing and grubbing would occur within portions of both the facility footprint and low disturbance work areas for new access roads. Vegetation would be cleared in all land cover types, but grubbing would occur only where trees were removed. The portion of each tree's root system where major roots connect to the trunk (the "root wad") would be "grubbed" out using heavy equipment, creating a hole 1–3 feet deep and several feet across, depending on the size of the root structure.

Bulldozers, wheeled loaders, dump trucks, water trucks, and hand tools (e.g., chain saws) would be used to clear and grub vegetation, and to transport the materials for disposal. Construction crews would haul all removed materials by dump truck to a licensed disposal facility (e.g., a landfill) authorized to take green waste.

2.2.2.2 ROUGH GRADING

Rough grading uses earthmovers, bulldozers, compactors, wheeled loaders, graders, excavators, water trucks, and support vehicles to grade the approximate contours of new access roads. (Here, "contours" refer to the width, length, and slope of the new access road, new shoulder, and any cut and fill slopes.) After rough grading of the access road contours, all drivable surfaces, road shoulders, and cut and fill slopes would be compacted. Compaction of these areas would be permanent, and would extend to 90 percent of the maximum dry density of the soil.

The entire facility footprint of all new access roads would be rough graded (i.e., 52.02 acres total, of which 49.23 acres would be east of the Friant-Kern Canal). Rough grading would result in the net import of approximately 4,000 cubic yards of soil. The fill material would be obtained either through reuse of on-site materials (such as those removed during foundation work) or from a licensed vendor. Despite a net import, some material may also be exported; if so, exported material would be disposed of at a licensed and SCE-approved landfill.

2.2.2.3 BLASTING

Controlled blasting may be conducted where large rocks prevent rough grading. Under SCE supervision, licensed personnel would conduct blasting using commercial explosives. Equipment used for blasting would include truck-mounted or tracked drills and support trucks. This equipment would access blasting sites via existing roads and rough-graded segments of new access roads. Blasting personnel would drill small-diameter holes and place explosives in them to minimize ground vibration outside of the immediate vicinity of the explosion. Flying rocks and air blasts would be mitigated by covering the entire blast site with steel plates that, in turn, would be covered in dirt. All controlled blasting would occur completely within the facility footprint of new access roads. Low disturbance work areas for new access roads may be used for equipment access and staging, but blasting would not occur within the low disturbance work areas themselves.

2.2.2.4 FINISH GRADING

Finish grading is the final contouring of new access roads to conform to design specifications. Finish grading involves similar equipment and operations as rough grading (i.e., earthmovers, bulldozers, excavators, wheeled loaders, graders, compactors, water trucks, and crew support vehicles).

Along the cut slopes at Colvin Mountain, a synthetic geotextile fabric would be installed in general conformance with the manufacturer's specifications. The synthetic geotextile fabric would be installed over the cut slope and would be buried with soil to an approximate depth of 3 inches. Heavy equipment operators would bury the fabric with soil. The anchoring system that would be used for the synthetic geotextile fabric would require a trench approximately 4.5 to 5 feet deep and a minimum of 2 feet wide.

Guard rails and one retaining wall would also be installed along some cut and fill slopes. At structure 76 (see Appendix B, Figure B-1 [xiv]), a 3- to 4-foot-tall retaining wall would be installed along approximately 50 feet of a new access road.

Construction crews would conduct finish grading entirely within the facility footprints and low disturbance work areas of new access roads.

2.2.2.5 INSTALLATION OF ROAD DRAINAGE SYSTEMS AND STORMWATER DIVERSION STRUCTURES

Drainage systems and stormwater diversion structures would be installed where new access roads cross intermittent drainages or, as necessary, to divert and convey rainwater off of road surfaces. These systems and structures would be installed into new access roads during and after finish grading. Drainage systems and stormwater diversion structures would consist of the following elements:

Roadside Swales. Swales function to collect surface water runoff from the adjoining cut slope and road surface. Constructed parallel to the road, swales would be either earthen along the majority of the Cross Valley Line or filled with gravel along Colvin Mountain. (See also Appendix D for plans and specifications pertaining to these systems and structures.)

- **Earthen swales.** Earthen swales are shallow ditches constructed along shoulders of some sections of new access roads. Earthen swales are not lined with concrete, rock, or erosion control materials. They are 2 feet wide and 1 foot deep with a 1:1 (horizontal:vertical) inside slope. These swales are used to convey water from the adjoining cut slope and road surface in areas that generate relatively little runoff. Approximately 2,200 feet of earthen swales would be installed east of the Friant-Kern Canal and Colvin Mountain. Most of these swales would be broken up into continuous lengths of less than 200 feet by drainage dip crossings or water bars.

- **Gravel-filled swales.** Gravel-filled swales are similar to earthen swales in dimensions but are filled with gravel that ranges from three-quarters of an inch to 1½ inches in diameter. Water flows through gravel-filled swales until it meets a drainage dip or water bar, where the water crosses the road. All access road swales along Colvin Mountain would be gravel filled. The longest swale would be approximately 400 feet long.

Stormwater Diversion Structures. Several types of stormwater diversion structures may be constructed across the road and function to divert water from the earthen or gravel-filled swales off the road surface. These structures include drainage dip crossings, water bars, and concrete overland crossings. (See also Appendix D for plans and specifications pertaining to these systems and structures.)

- **Drainage dip crossings.** Drainage dip crossings are very shallow "V-shaped" sections of the access road's drivable surface and measure 3–6 inches deep, 4–12 feet wide, and 16 feet long. The drainage-dip surface consists of a 1-foot-thick layer of crushed rock (0.75 to 1.5 inches in diameter) over a 9-inch sand filter blanket over a filter fabric that wraps around sides and bottom sand blanket. On the downslope side of the road's drivable surface, the drainage dip crossing is bordered by 6-inch-high earthen berms with an opening connected to a McCarthy drain (described below), or a grouted river rock energy dissipator. Water flows across the road over drainage dip and through the crushed rock into the McCarthy drain or a grouted river rock energy dissipator.

  Fourteen new drainage dip crossings would be constructed, all east of the Friant-Kern Canal. Five of these would outflow to McCarthy drains and into grouted river rock energy dissipators, where the constructed fill slope would be greater than 5 feet high; seven drainage dip crossings would outflow directly to the grouted river rock energy dissipators, where the constructed fill slope would be less than 5 feet high. The remaining two drainage dip crossings would not outflow to either McCarthy drains or grouted river rock energy dissipators because the terrain is low and flat.

- **Water bars.** Water bars, which are approximately 4–12 feet wide and 16 feet long, are made of compacted soil. Water bars cross the drivable surface and are evenly divided between a lowered (3- to 6-inch-deep), concave section and a raised (3- to 6-inch-high), convex section. Water bars collect stormwater off the road surface and direct the water to a McCarthy drain or grouted river rock energy dissipator (described below).

  Twenty-four water bars would be constructed on the new access roads, all east of the Friant-Kern Canal. Eight of these would outflow to McCarthy drains and into grouted river rock energy dissipators (described below), where the slope would be greater than 5 feet high; the other 16 would outflow directly to grouted river rock energy dissipators where the slope would be less than 5 feet high.

- **Concrete overland crossings.** Concrete overland crossings are concave, concrete-covered sections of the access road's 16-foot-wide drivable surface. These crossings are installed where a new access road crosses an ephemeral drainage or creek. These concave sections of the road surface allow water 5–11 inches deep to flow across the road surface. On the downslope side of the access road's drivable surface, water flows onto grouted river rock riprap underlain with facing class riprap that extends about 15 feet beyond the drivable surface at these crossings. Riprap is estimated to cover an area of approximately 5–10 feet wide and 40–178 feet long (depending on the location). This area of riprap reduces the velocity of the flowing water.

  Four new overland crossings would be constructed, all east of the Friant-Kern Canal.

Outflow Systems. Surface water collected in swales and conveyed across the road is then generally diverted into an outflow system that reduces the velocity of the water and allows it to flow in a more natural sheet flow condition. Energy dissipators, sometimes used in conjuction with McCarthy drains, compose the outflow system.

- **McCarthy Drains.** McCarthy drains (also known as MacDrains) collect water from a drainage dip or water bar and convey water off the road surface and down the road slope onto the energy dissipators, where the stormwater velocity dissipates onto the adjacent land cover. The upper portion of the McCarthy drain and lower portion of the flume is an open 18-inch-diameter half corrugated metal pipe. The flume directs water to a grouted river rock energy dissipator (described below). The area along the backside of the flume is backfilled with soil to provide a ramp and facilitate upslope movement for small vertebrates.

  Thirteen new McCarthy drains would be constructed, all east of the Friant-Kern Canal. Five would be associated with drainage dip crossings and eight with water bars.

- **Grouted River Rock Energy Dissipator.** An energy dissipator is composed of grouted river rock.[4] The energy dissipator has a minimum 12-inch-diameter rock that protrudes at least 4 inches from the grouting. As water passes over the energy dissipator, its velocity is slowed by the protruding rock before it enters adjacent land cover.

  Forty-five energy dissipaters would be installed east of the Friant-Kern Canal; of these, 12 would be associated with drainage dip crossings, 24 with water bars, four with concrete overland crossings, and five with roadside swales.

Pipes. Pipes, which are a component of a road drainage system, convey surface water runoff under roads. Covered Activities would include replacing one existing pipe culvert associated with existing roads and installing a new culvert that would be affected by construction of new access roads. At structure 65 (see Appendix B, Figure

[4] Grouted riprap is a permanent erosion-resistant ground cover that is used to stabilize the runoff exiting the McCarthy drains and reduce the sediment movements that are subject to significant erosion. Grouted riprap is chosen to withstand hydraulic forces, such as scour forces from erodible flow velocities exceeding 5 feet per second; effects of floating debris; and all forces that may affect stability. In addition, the grout helps control surface drainage to prevent runoff from flowing beneath the rocks and prevent rock particle migration generated by hydrostatic pressure uplift forces. The grouted rock riprap consists of protection having the voids filled with concrete grout to form a monolithic armor that confines the granular sub-base material (rocks).

B-1 [xii]), located west of the Friant-Kern Canal, a 12-inch-diameter, 32-foot-long corrugated metal pipe culvert would be installed. At structure 90 (see Appendix B, Figure B-1 [xv]), located east of the Friant-Kern Canal, a 24-inch-diameter, 65-foot-long reinforced concrete pipe culvert would be installed.As discussed previously in Section 2.2.2, most road drainage systems and stormwater diversion structures would be included as part of the facility footprint of new access roads (i.e., 32.24 acres, of which 29.44 acres would be located east of the Friant-Kern Canal). Some road drainage systems and stormwater diversion structures would extend up to 25 feet beyond the facility footprint of new access roads (i.e., beyond the road's drivable surface, shoulder, and cut and fill slopes). Based on final plan drawings, the facility footprint of road drainage systems and stormwater diversion structures would be about 0.51 acre, of which 0.50 acre would be located east of the Friant-Kern Canal (Table 2-1).

SCE would construct road drainage systems and stormwater diversion structures using graders, backhoes, excavators, ready-mix-concrete trucks, water trucks, and hand tools. All construction equipment would be operated only within the facility footprint and low disturbance work areas of new access roads.

2.2.2.6 REVEGETATION OF NEW ACCESS ROADS

The cut and fill slopes and low disturbance work areas for all access roads would be revegetated after finish grading and the installation of drainage and stormwater diversion structures. Revegetation would entail decompacting the soil and/or roughening the soil surface (to a depth of several inches), and applying a seed mix with a tackifier and mulch. Soil decompaction could be performed by a rototiller; by a tractor with attachment; by the tines of heavy machinery, such as a backhoe; or, in small areas, by hand tools. Seed mixes would be certified as weed free and acceptable to landowners. The tackifier would adhere seed to the soil and to applied mulch; the mulch would protect the soil surface until plants become established. Seed, tackifier, and mulch would be mixed in a liquid medium and sprayed onto exposed soil surfaces by a truck equipped for hydromulching; the truck would operate from established access roads and pads. In smaller areas or areas with intermingled patches of remaining vegetation and undisturbed soil, seed mix may be applied by a hand-operated broadcaster, and covered with mulch by hand.

Although revegetation would be performed immediately after road finish grading (see Section 2.2.2.4, Finish Grading) and installation of road drainage systems and stormwater diversion structures (see Section 2.2.2.5, Installation of Road Drainage Systems and Stormwater Diversion Structures), seed would remain dormant until the rainy season.

2.2.3 IMPROVEMENT AND REPAIR OF EXISTING ACCESS ROADS

In addition to the new access roads described in Section 2.2.2, SCE's construction-related vehicles would use existing public roads, existing SCE access roads, and existing landowner roads. In the HCP Planning Area, 40.5 miles of public (paved and unpaved), SCE (unpaved), and landowner roads (unpaved) would be used (Figure 1-4 and Appendix B). Approximately 16.5 miles of these existing roads are located east of the Friant-Kern Canal. Construction-related vehicles would use these roads as part of each construction Covered Activity. However, 28 miles of these roads would require some improvement of their drivable surface to allow for their use during construction (see Appendix B), and all existing roads may require repairs to their drivable surface after construction.

Preconstruction improvements to the drivable surface would involve filling potholes and smoothing the surface, and checking and increasing compaction. SCE would fill potholes and smooth the drivable surface using a small grader, support vehicles (e.g., pickup trucks), hand tools, and water trucks. SCE would compact the drivable surface using compactors, support vehicles, and water trucks.

Postconstruction repairs to the drivable surface of unpaved SCE and unpaved landowner roads would also involve filling potholes and smoothing the surface. These repairs would use the same equipment described for preconstruction filling of potholes and smoothing of the road surface.

Improvements and repairs would not change the facility footprint of any existing road. All improvements and repairs would take place within the facility footprint of the existing roads.

2.2.4 CONSTRUCTION OF NEW TRANSMISSION LINE STRUCTURES

SCE would construct 90 new TSPs and 16 new LSTs (106 total), of which 25 TSPs and 14 LSTs (39 total) would be located east of the Friant-Kern Canal.

The construction of these new transmission line structures by SCE would proceed through five steps:

- Preparation of TSP and LST structure pads
- Preparation of crane pads
- Construction of TSP foundations and LST footings
- Assembly and erection of structures
- Revegetation of crane pads

Each step associated with construction of new transmission line structures is described in the following subsections.

2.2.4.1 PREPARATION OF TUBULAR STEEL POLE AND LATTICE STEEL TOWER STRUCTURE PADS

The facility footprint of transmission line structures (i.e., TSPs and LSTs) is a graded, compacted surface (referred in this document to as a “structure pad”) for installation of each structure’s foundation. The entire structure pad would be maintained free of vegetation. Appendix B labels the facility footprint of transmission line structures (i.e., structure pad) as “clear area.”

As discussed in Chapter 1, Introduction and Background, the north-south portion of the Cross Valley Line would be placed in an existing transmission line corridor (which is shared with the completed Big Creek Rebuild line). In this north-south portion of the HCP Planning Area, new transmission line structures would be located in existing structure pads. The TSP and LST structure pads in the north-south portion of the HCP Planning Area are currently maintained clear of vegetation and would remain so after completion of construction. Although some LSTs would have larger structure pads (i.e., larger facility footprints) than TSPs, their structure pads would vary in size and the size ranges of LST and TSP structure pads would overlap. The structure pads of TSPs would differ between the north-south and east-west portions of the HCP Planning Area.

In the north-south portion of the HCP Planning Area, the existing TSP structure pads are rectangular and occupy 0.38 to 0.39 acre (with lengths of 150–153 feet and widths of 110–111 feet) and the one existing LST structure pad occupies 0.62 acre (176 feet by 152 feet). In the east-west portion of the HCP Planning Area, new TSP structure pads would be closer to square and would occupy 0.25 to 0.27 acre (with lengths of 110–117 feet and widths of 100–102 feet). In the east-west portion of the HCP Planning Area, new LST structure pads are east of the Friant-Kern Canal and are rectangular, totaling 0.25 to 0.52 acre (with lengths of 110–177 feet and widths of 99–141 feet). Based on final plan drawings, the facility footprint of TSP and LST structure pads is 15.72 acres, of which 11.42 acres would be located east of the Friant-Kern Canal (see Table 2-1).

At most locations, the structure pads of transmission structures partially overlap the facility footprints of new access roads or existing access roads. The total area of the structure pads that do not overlap with access road (new and existing) facility footprints is 9.48 acres, of which 5.66 acres are located east of the Friant-Kern Canal.

Structure pads for new transmission line structures would be constructed in four steps: clearing and grubbing, rough grading, blasting, and final grading. The methods and equipment used to implement these steps would be the same as those described previously in Section 2.2.2.1, Clearing and Grubbing; Section 2.2.2.2, Rough Grading; Section 2.2.2.3, Blasting; and Section 2.2.2.4, Finish Grading. The entire structure pad surface would be graded and compacted. Structure pads for new transmission line structures would not have cut and fill slopes or drainage systems and stormwater diversion structures. Each of the structure pads for the new transmission line structures would require the temporary installation of stormwater BMPs (see Section 2.2.7, Installation of Storm Water Pollution Prevention Plan Best Management Practices).

When preparing the structure pads of the transmission line structures, construction crews would use low disturbance work areas for equipment access and staging (labeled as “Structure Work Area” in Appendix B and “TSP and LST structure work areas” in Table 2-1). This low disturbance work area surrounds each TSP and LST structure pad. Low disturbance work areas for structure pads have been delineated on the final plans.

Based on final plan drawings, TSP and LST structure work areas would total approximately 52.54 acres, of which 25.81 acres are located east of the Friant-Kern Canal (Table 2-1). Portions of the low disturbance work areas for preparing structure pads overlap with some low disturbance work areas for construction of new access roads.

2.2.4.2 Preparation of Crane Pads

Cranes would be required to assemble the transmission line structures on their foundations, and would be required later for some maintenance of the transmission line structures. Crane operation requires a compacted surface. Cranes used for assembly and subsequent maintenance of the transmission line structures could be operated within structure pads or access road facility footprints for 92 of the 106 new transmission line structures. New and distinct high disturbance work areas would be constructed for 14 of the transmission line structures. These areas are referred to as “crane pads” in Table 2-1 and in this subsection; Appendix B refers to them as “O&M crane pads and wire setup areas”). All crane pads would be located east of the Friant-Kern Canal. Unlike the structure pads for transmission line structures, crane pads would not contain permanently installed structures and would not be maintained clear of vegetation after construction ends. Rather, crane pads would be revegetated after construction, similar to other types of work areas (including high disturbance and low disturbance work areas).

Crane pads would all measure 0.06 acre (50 by 50 feet). The total area required for the 14 crane pads is 0.80 acre (see Table 2-1). Crane pads would almost entirely overlap with the structure pads of new transmission line structures and facility footprint of new access roads (0.78 of the 0.80 acre of crane pads).

To prepare the 14 crane pads, SCE would use the same methods and equipment used for the clearing and grubbing, rough grading, blasting, and final grading of new access roads (see Section 2.2.2.1, Clearing and Grubbing; Section 2.2.2.2, Rough Grading; Section 2.2.2.3, Blasting; and Section 2.2.2.4, Finish Grading). Each 0.06-acre crane pad surface would be graded and compacted (as described for TSP and LST structure pads in Section 2.2.4.1). Temporary stormwater BMPs would be installed for each 0.06-acre crane pad (see Section 2.2.7, Installation of Storm Water Pollution Prevention Plan Best Management Practices). Construction crews would use the low-disturbance work areas associated with construction of structure pads and new access roads for preparation of crane pads.

2.2.4.3 CONSTRUCTION OF TUBULAR STEEL POLE FOUNDATIONS AND LATTICE STEEL TOWER FOOTINGS

Within the prepared TSP and LST structure pads, SCE would construct permanent TSP foundations and LST footings. These foundations would be located entirely within the TSP and LST structure pads, as described above in Section 2.2.4.1, Construction of Tubular Steel Pole and Lattice Steel Tower Structure Pads. To construct foundations and footings, SCE would use truck- or tread-mounted augers, wheeled or tracked cranes, water trucks, ready-mix-concrete trucks, backhoes, and miscellaneous support vehicles. All vehicles and equipment would remain on permanent access roads, within TSP and LST structure pads, or within low disturbance work areas delineated for TSP and LST structure pads.

A TSP is supported by a single, circular, reinforced-concrete foundation. SCE would use an auger to excavate a hole 6–10 feet in diameter and 20–37 feet deep for the foundation, depending on soil conditions and other engineering requirements. SCE would spread excavated material on the adjacent TSP structure pad, use it in the rough grading of access roads or pads for transmission structures and cranes, or dispose of the material outside of the HCP Planning Area at a licensed landfill. After excavation of a hole for the foundation, reinforced-steel bar (rebar) cages would be set into the excavated hole, and anchor bolts would be placed and concrete pumped from a ready-mix-concrete truck into the rebar cages. Depending on foundation dimensions, 50–110 cubic yards of concrete would be delivered to each TSP site for the foundation. Depending on site-specific conditions and engineering requirements, the concrete foundation would extend above ground 1–4 feet.

LSTs are supported by four reinforced-concrete footings. An auger would be used to excavate four footing-holes that would each be 31–49 feet deep and 3–6 feet in diameter. SCE would spread excavated material on the adjacent LST structure pad, use it in the rough grading of roads or pads for transmission structures and cranes, or dispose of the material outside of the HCP Planning Area at a licensed landfill. After excavation, construction crews would set rebar cages in each footing hole and pour in concrete from a ready-mix-concrete truck. Depending on footing height, diameter, and depth, 32–60 cubic yards of concrete would be delivered to each new LST structure site for the four footings. The footings would extend 1–4 feet above ground, depending on sites-specific conditions and engineering requirements.

Where a foundation hole would extend below the groundwater table, the soil may be not sufficiently stable to allow for excavation and placement of concrete. In this situation, the construction crew may pump a soil-stabilizing solution into the hole to prevent material from sloughing off the sides and caving into the bottom of hole. After excavating the hole, the construction crew would remove all unused stabilizing solution, and it would be trucked to a licensed and SCE-approved landfill for disposal. Alternatively, the construction crew may construct a lining (a casing) within the hole to prevent sloughing and caving of soil.

Also, construction crews may pump water out of the hole before pouring the concrete. A dewatering plan would be prepared, the pumped water would be pumped into a container truck, and the water would be disposed of off-site at an acceptable disposal site, consistent with the SWPPP for the Cross Valley Line.

Where foundation holes would extend into bedrock, SCE may install the TSP/LST on a rock anchor foundation. The construction crew would drill holes ("dowel holes") into the rock, and a steel anchor would then be placed and mortared into each drilled hole. These steel anchors would serve as the foundation/footings for the TSP/LST structures.

2.2.4.4 Assembly and Erection of Structures

After the production of foundations and footings, SCE would complete the construction of TSPs and LSTs by assembling and erecting the TSP/LST structure. The TSP and LST structures would be assembled and erected mostly within TSP and LST structure pads (see Section 2.2.4.1, Preparation of Tubular Steel Pole and Lattice Steel Tower Structure Pads), within crane pads (see Section 2.2.4.2, Preparation of Crane Pads), and within connected facility footprints of new access roads (see Section 2.2.2, Construction of New Access Roads). The area for assembling and erecting TSP and LST structures (i.e., structure pads, structure work areas for TSPs and LSTs) could be as large as 0.92 acre in the north-south portion of the HCP Planning Area and 0.49 acre in the east-west portion, generally extending beyond the boundaries of permanent access road facility footprints. Structure work areas extending beyond structure pads and access road facility footprints would not be cleared and grubbed, graded, or otherwise prepared; however, vehicles, heavy equipment, and materials may be used in these additional areas. After erection of TSP/LST structures, structure work areas for TSPs/LSTs would be revegetated.

Two existing LST structures (Towers 105a and 105b) would be replaced at the eastern terminus of the east-west portion of the HCP Planning Area during assembly and erection of structures. Replacement Towers 105a and 105b would be constructed on location. Upon completion of new tower construction, the existing conductors would be transferred from the old towers to the new towers. The existing towers would then be laid down on their sides, dismantled, and hauled off to a recycling center. Replacement of these two LST structures would occur within LST replacement work areas (referred to as "structure replacement work areas" in Appendix B). Each LST structure replacement work area would occupy approximately 0.47 acre (200 feet by 100 feet); the total area of the two LST structure replacement work areas would be approximately 0.92 acre (see Table 2-1). Approximately 0.63 acre of LST structure replacement work areas would overlap with structure pads and structure work areas.

Equipment used to assemble and erect TSPs and LSTs would include truck-mounted, wheeled, or tracked cranes; flatbed trucks; hydraulic jacking equipment; and bucket trucks.

SCE would transport TSPs to prepared permanent TSP structure pads (see Section 2.2.4.1, Preparation of Tubular Steel Pole and Lattice Steel Tower Structure Pads) in two or more sections on flatbed trucks. These pieces would be assembled in the structure pad and structure work area of TSPs using hydraulic jacking devices and a tread-mounted crane. After initial assembly, the construction crew would install arms, insulators, and wire rollers on the arms. (The wire rollers are used in installing conductors.) Finally, SCE would use a minimum 80-ton, tread-mounted, crane to lift and set the TSP (which may range from 120–160 feet in height) on its foundation. As discussed in Section 2.2.4.2, Preparation of Crane Pads, the crane would be operated from prepared crane pads or within structure pads or access road facility footprints.

SCE would transport the LST components to LST structure pads and structure work areas, where these components would be stored temporarily. The construction crew would then proceed to assemble these components into LSTs. At this time, the construction crew would also install insulators and wire rollers on the arms of the LST structure. Assembled LSTs (which may range from 120 to 160 feet in height) would be raised and placed on their foundations using an 80-ton tread-mounted crane, and then bolted in place. As discussed in Section 2.2.4.1, Preparation of Tubular Steel Pole and Lattice Steel Tower Structure Pads, the crane would be operated from prepared crane pads or within structure pads or access road facility footprints.

2.2.4.5 REVEGETATION OF CRANE PADS

Unlike the permanent structure pads for TSPs and LSTs (see Section 2.2.4.1, Preparation of Tubular Steel Pole and Lattice Steel Tower Structure Pads), the 0.06-acre (50-foot by 50-foot) crane pads that were graded, compacted, and constructed would not contain permanently installed structures or facilities and would not be maintained clear of vegetation (except where an access road facility footprint or structure pad would be used as part or all of the crane pad). Rather, crane pads would be revegetated after construction. Revegetation of crane pads would entail decompaction, recontouring of land surfaces, and application of a seed mix with a tackifier and mulch. Decompaction of each 50-foot-by-50-foot pad could be performed by a rototiller; by a tractor with attachment; by the tines of heavy machinery such as a backhoe; or, in small areas, by hand tools. Seed mixes would be certified as weed free and acceptable to landowners. The tackifier would adhere seed to the soil (and to applied mulch), and the mulch would protect the soil surface until plants become established. Seed, tackifier, and mulch would be mixed in a liquid medium and sprayed onto exposed soil surfaces by a truck equipped for hydromulching. In smaller areas or areas with intermingled patches of remaining vegetation and undisturbed soil, seed may be applied by a hand-operated broadcaster, and covered with mulch by hand.

2.2.5 STRINGING OF CONDUCTORS AND OPTICAL GROUND WIRES

Stringing of conductors and OPGWs would consist of four steps:

- Placing guard poles (in low disturbance work areas)
- Preparing pulling-tensioning-splicing work areas (in low disturbance or high disturbance work areas, depending on location)
- Stringing conductors and OPGWs
- Installing bird flight diverters

The steps used to string conductors and OPGWs are described in the following subsections.

2.2.5.1 PLACEMENT OF GUARD POLES

Before stringing conductors, SCE would place 78 guard poles at existing facilities, including roads and other utilities, and at rivers and creeks. These temporary structures would prevent a conductor from dropping onto these public facilities and waterways during their attachment to LSTs and TSPs (i.e., stringing).

Typical guard poles are composed of 60- to 80-foot-tall wood poles. SCE would temporarily install two to four poles on either side of a facility, infrastructure, or waterway crossing. In some instances where it would not be feasible for SCE to install guard poles, cranes or bucket trucks may be parked adjacent to public roads or existing electric distribution lines to prevent conductors from dropping onto public facilities and waterways during stringing.

To install a guard pole, a backhoe or tread- or truck-mounted auger would dig two to four holes in the ground, each approximately 3–4 feet in diameter and 6–10 feet deep. Wooden poles would be brought to the work area on a flatbed truck, and a wheeled or a tracked crane would place a wooden pole in each of the holes, which would then be backfilled by the backhoe and hand tools. The SCE crew would then hang a guard arm pole horizontally between the poles that were just set. This guard arm would be attached near the top of the poles. In some cases, especially where the line would cross a State highway, guard poles would be set on both sides of the road and wire netting would be pulled between the poles.

After stringing of conductors and OPGWs, a crane and/or backhoe would be used to extract the wooden poles, which would be taken away on a flatbed truck. The SCE crew would then backfill the holes using the backhoe and hand tools. Disturbed land would then be revegetated using the same methods described in Section 2.2.2.6, Revegetation, and Section 2.2.4.5, Revegetation of Crane Pads.

Guard poles would be installed or cranes or bucket trucks would be parked at 78 locations, of which 18 would be located east of the Friant-Kern Canal. All of these locations are areas labeled “guard pole” in Appendix B. Guard pole work areas (categorized as low disturbance work areas) for installing guard poles or placing cranes or bucket trucks would range in size from 0.17 to 0.87 acre, and would have a combined total area of 17.54 acres, of which 3.81 acres are located east of the Friant-Kern Canal (see Table 2-1). These temporary guard pole work areas would often overlap with adjacent access roads, structure pads and structure work areas for TSPs and LSTs, or other high disturbance and low disturbance work areas. For the 78 guard poles, 13.94 acres is in addition to land disturbance resulting from other facility footprints and work areas (including both low disturbance and high disturbance work areas), of which 2.14 acres are located east of the Friant-Kern Canal.

Also, some proposed guard pole work areas are isolated (i.e., not accessible from other facility footprints or work areas) and would require off-road travel for access. To access these guard pole work areas, vehicles would drive across cropland or natural land cover types within an area that is delineated in the field for such off-road travel. This off-road travel would crush vegetation and disturb land in corridors up to 12 feet wide. The total length of temporary off-road travel corridors is approximately 1,500 feet and, based on a width of 12 feet, their total area is 0.41 acre, of which 0.24 acre is located east of the Friant-Kern Canal.

Should any areas measuring several square feet or more have exposed soil within these off-road travel corridors, and should landowner permission be granted, the off-road travel corridors with crushed vegetation and disturbed land would be revegetated (as described above in Section 2.2.2.6, Revegetation, and Section 2.2.4.5, Revegetation of Crane Pads).

2.2.5.2 PREPARATION OF PULLING-TENSIONING-SPLICING WORK AREAS

Seventeen work areas for pulling, tensioning, and splicing new conductors and new OPGWs would be prepared along the 23-mile-long HCP Planning Area (referred to as “pulling-tensioning-splicing work areas” in this discussion and as “Wire Setup Areas” in Appendix B). Fifteen of these sites would be located east of the Friant-Kern Canal.

The 17 pulling-tensioning-splicing work areas (low and high disturbance work areas depending on location[5]) would vary considerably in size. Their width would range from 100 to 200 feet, their length from 200 to 500 feet, and their area from 0.46 acre to 4.6 acres. Their combined area would be 28.89 acres, of which 15.34 acres are located east of the Friant-Kern Canal (Table 2-1). Low disturbance pulling-tensioning-splicing sites would total 15.73 acres (2.18 acres located east of the Friant-Kern Canal); high disturbance pulling-tensioning-splicing sites would total 13.16 acres (all acres located east of the Friant-Kern Canal) (Table 2-1).

All pulling-tensioning-splicing work areas (both low disturbance and high disturbance work areas) would overlap with at least portions of access road facility footprints, permanent structure pads, and/or temporary crane pads. Approximately 18.62 acres of pulling-tensioning-splicing work areas would overlap with access road facility footprints, permanent structure pads, and/or temporary crane pads, of which 15.39 acres are located east of the Friant-Kern Canal.

Similar to crane pads, preparation of pulling-tensioning-splicing work areas involves clearing and grubbing, blasting, and rough and final grading of the site to produce a level surface suitable for operation of equipment to pull, tension, and splice conductors and OPGWs. Clearing and grubbing, blasting, and rough and final grading would be performed as described previously in Section 2.2.2, Construction of New Access Roads. However, after completion of conductor and OPGW stringing and installation of bird flight diverters, the exposed land surface of all pulling-tensioning-splicing work areas would be decompacted, recontoured, and revegetated as described previously in Section 2.2.4.5, Revegetation of Crane Pads.

All vehicles and equipment would access pulling-tensioning-splicing work areas (both low disturbance and high disturbance work areas) via access roads, structure pads, crane pads, and the temporary TSP and LST structure work areas. SCE would confine all other equipment and activities involved in preparing pulling-tensioning-splicing work areas to within the sites’ boundaries (i.e., 0.46 acre to 4.6 acres), and no additional work areas would be used.

2.2.5.3 Stringing of Conductors and Optical Ground Wires

SCE would install six conductors and one OPGW on the new TSP and LST transmission line structures of the new 23-mile-long Cross Valley Line. The OPGW is a cable, measuring approximately 1 inch in diameter, that houses communication fiber optics and would shield the conductors, LSTs, and TSPs in the event of a lightning strike. As part of installing conductors and OPGWs, SCE construction crews would also attach vibration dampers, weights, and suspension and dead-end hardware assemblies to conductors and the OPGW.

The following equipment would be used to install conductors, OPGWs, vibration dampers, weights, and other associated hardware:

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[5] For the purposes of this HCP, pulling-tensioning-splicing work areas constructed within natural land cover types (land cover types other than agriculture or developed) are considered high disturbance work areas, given the extended amount of time that would be required for recovery to preexisting natural conditions. Pulling-tensioning-splicing work areas constructed within agricultural land cover types are considered low disturbance work areas given that agricultural practices would resume immediately after use of these low disturbance work areas.

- Trailer-tractor pulling and tensioning equipment
- Dozer Wire Dolly's winches
- Bucket trucks (fastened to and used to move along the conductors)
- Truck-mounted man lifts
- Helicopters

This equipment would be brought to the new pulling-tensioning-splicing work areas (see Section 2.2.5.2, Preparation of Pulling-Tensioning-Splicing Work Areas), and the existing pulling-tensioning-splicing work areas in the north-south part of the HCP Planning Area via access roads. To reach some pulling-tensioning-splicing work areas (both low disturbance and high disturbance work areas), the equipment may also be transported across structure pads and associated TSP and LST structure work areas, and across crane pads.

Construction crews would begin stringing of conductors and OPGWs by installing rollers (also called "travelers") on the bottom of insulators already mounted on the arms of a TSP or LST (see Section 2.2.4.4). An SCE crew working from a pulling-tensioning-splicing work area (both low disturbance and high disturbance work areas) would install one end of a sock line (a small cable used to pull a conductor or OPGW) onto a roller using helicopters and/or truck-mounted lifts, and would then pull the sock line along and attach it to the rollers of a series of TSPs and/or LSTs. Truck-mounted lifts would travel only on access roads and on structure pads, LST and TSP structure work areas, and crane pads. Helicopters would be used to pull the sock lines between pull sites.

Once the sock line was in place, the SCE crew would attach one end of a conductor to the sock line and pull (or string) the conductor into place along the sock line and rollers using trailer-tractor pulling equipment at the 17 pulling and tensioning sites along the right-of-way (ROW). The conductor would be pulled through each TSP or LST structure under controlled tension to keep it elevated and away from obstacles.

The end of a conductor would be attached to the end of the next length of conductor by splicing. SCE personnel would place the terminal segment of the two conductors side by side and would assemble and tighten a casing around them (i.e., a splice case). SCE personnel would splice segments of the OPGW together by heating and fusing them in a sterile environment or in an enclosure at a trailer or truck. SCE personnel would splice conductors and the OPGW splicing on the ground at the pulling-tensioning-splicing work area (both low disturbance and high disturbance work areas). Then the splice case would be attached to the top of the TSP or LST structure located adjacent to that pulling-tensioning-splicing work area.

Once the conductor was in place and sagged to the proper tension, trucks with lifts and hand tools would be used at LSTs and TSPs to clip the conductor into each insulator, remove the rollers, and install vibration dampeners and other hardware. Rather than being fastened to insulators, the OPGW would be attached to the structure at the top of each TSP and LST.

2.2.5.4 Installing Bird Flight Diverters

Bird flight diverters are nonlighted reflective structures that are fitted on the OPGW to make the OPGW more visible to birds and reduce electrocutions resulting from collisions with transmission lines. This HCP would cover the installation of two types of diverters:

- BirdMark Model BM-AG diverters, which are 5.375-inch-diameter discs with reflective tape on their center and that glow in dim light and at night
- Swan-Flight diverters, which consist of a colored polyvinyl chloride (PVC) rod wrapped around the OPGW in a coil with a diameter of 7–8 inches.

SCE would install bird flight diverters along the OPGW at 15-foot intervals in the east-west portion of the HCP Planning Area, and at 30-foot intervals in the north-south section of the transmission line. In the north-south section, the adjacent existing transmission line (the Big Creek Rebuild transmission line) has bird flight diverters at 30-foot intervals, but new diverters on the Cross Valley Line would be offset 15 feet from those on the adjacent Big Creek Rebuild transmission line.

SCE would install BirdMark diverters west of the Friant-Kern Canal, except that Swan-Flight diverters would be installed in certain areas located between the following transmission structures: 8 and 9, 14–16, 18 and 19, 50–53, 78 and 79, and 83 and 84 (Figure 1-4 and figures in Appendix B). Alternating BirdMark and Swan-Flight diverters would be installed east of the Friant-Kern Canal from Constructed Structure 90 to Constructed Structure 104 (Figure 1-4 and figures in Appendix B).

The bird flight diverters would be installed using bucket trucks or spacing carts (suspended from and moving along conductors) and, in some locations, helicopters. No disturbance of land or vegetation outside of access roads, structure pads, TSP and LST structure work areas, and pulling-tensioning-splicing work areas would occur; all equipment and materials used to install bird flight diverters would be suspended from conductors or a helicopter within the boundaries of access roads, structure pads, TSP and LST structure work areas, and pulling-tensioning-splicing work areas.

2.2.6 Installation of Storm Water Pollution Prevention Plan Best Management Practices

As discussed in AMM C-9, Control Erosion near Waterways and Habitat Occupied by Covered Species, SCE would prepare SWPPP BMPs, and would install materials and construct temporary structures around all facility footprints and both low disturbance and high disturbance work areas to ensure that stormwater runoff and pollutants and their sources associated with construction are controlled. (See definitions of low disturbance and high disturbance work areas in Section 2.1; see locations in Appendix B. Pollutants include sediment carried by runoff.) These temporary structures may include check dams, silt fences, fiber rolls, gravel bag berms, sandbag barriers, covers of plastic sheeting on stockpiled materials, and stabilized entrances/exits to facility footprints and low disturbance and high disturbance work areas.

Temporary silt fences, fiber rolls, gravel bag berms, and check dams would be used as linear barriers around the perimeter of all delineated facility footprints and low disturbance and high disturbance work areas to prevent sheet flow. Temporary silt fences would be staked to a height of 24 inches and the fence's fabric would be buried 6 inches at its base. Fiber rolls would be at least 8 inches in diameter, and staked and keyed into land surfaces perpendicular to the slope; gravel bags placed on the land surface would be used similarly. Sandbag barriers up to 18 inches high and check dams up to 3 feet high may be also be used near perimeters of all delineated facility footprints and low disturbance and high disturbance work areas to prevent stormwater run-on and runoff. Stabilized entrances/exits to facility footprints and low disturbance and high disturbance work areas would consist of 3-inch-diameter crushed rock or decomposed granite, placed at least 1 foot deep in an area at least 10 feet wide and 50 feet long at the exits/entrances (although some sites may require a shorter length).

SCE would implement these BMPs as necessary to prevent runoff from construction sites (i.e., the designated facility footprints and designated low disturbance and high disturbance work areas) from infiltrating the soil.

BMPs would remain in place until construction is complete and the soil surface has been effectively stabilized, or until other means of controlling runoff and excessive erosion have been implemented (e.g., mulch installed during revegetation).

2.3 OPERATIONS AND MAINTENANCE COVERED ACTIVITIES

HCP Covered Activities consist of SCE's future transmission-line O&M activities within the HCP Planning Area, including the existing adjacent transmission line located in the north-south portion of the Cross Valley Line transmission corridor. The O&M Covered Activities described here are organized into two classes (Class 1 and Class 2), defined by the location and type of land disturbance associated with the activity.

Class 1 O&M activities would be conducted entirely within the drivable surface of access roads or within TSP and LST structure pads, or would be implemented from aircraft; therefore, they would not disturb plants or the soil surface of natural land cover types (see Chapter 3 for definitions of HCP land covers). Six Class 1 O&M Covered Activities would occur:

- Aerial inspections (Section 2.3.1)
- Routine line patrols in the HCP Planning Area (Section 2.3.2)
- OPGW testing (Section 2.3.3)
- Minor LST and TSP structure repair (Section 2.3.4)
- Minor conductor repair (Section 2.3.5)
- Insulator washing (Section 2.3.6)

Class 2 O&M Covered Activities would be conducted in part in natural land covers outside of TSP and LST structure pads and outside the drivable surface of access roads; therefore, they may disturb vegetation and land in those areas. Ten Class 2 O&M Covered Activities would occur:

- Major TSP and LST structure repair (Section 2.3.7)
- TSP replacement (Section 2.3.8)
- LST replacement (Section 2.3.9)
- Major conductor and OPGW repair (Section 2.3.10)
- Repair/replacement of bird flight diverters (Section 2.3.11)
- Access road maintenance (Section 2.3.12)
- Road drainage system and stormwater diversion structure maintenance and replacement (Section 2.3.13)
- Installation of SWPPP BMPs (Section 2.3.14)
- Vegetation management—tree pruning (Section 2.3.15)
- ROW management—brush and weed abatement (Section 2.3.16)

Each Class 1 and Class 2 O&M Covered Activity is described in the following subsections. All O&M activities would involve using vehicles to transport personnel, equipment, and materials in the HCP Planning Area.

Table 2-3 lists the total area of land that would be disturbed by each O&M Covered Activity by the same categories of land disturbance used for construction Covered Activities (see Section 2.1). The descriptions of O&M Covered Activities in the following sections include the basis for these acreages.

General O&M AMMs (as described in Table 2-4) are also covered by this HCP because these measures would be implemented during O&M Covered Activities to avoid and reduce the effects on natural resources, including Covered Species. A comprehensive list of planning and design, construction, O&M, and habitat- and species-specific AMMs that would be implemented during Cross Valley Line Covered Activities is provided in Appendix G.

O&M Covered Activities must sometimes be conducted under emergency conditions, which may require off-road vehicle use. Emergency conditions could result from events such as natural disasters, acts of God, an airplane hitting the conductors or damaging structures, vandalism, or theft. Activities undertaken during emergency conditions are part of the O&M Covered Activities in this HCP. All Class 1 O&M Covered Activities described in this section could be conducted under emergency conditions. Because Class 1 O&M Covered Activities would be conducted entirely within the drivable surface of access roads or within TSP and LST structure pads, or would be implemented from aircraft/helicopters, Class 1 O&M Covered Activities conducted under emergency conditions would not disturb plants or the soil surface of natural land cover types. The Class 2 O&M Covered Activities described in this section could also be conducted under emergency conditions. Implementation of certain AMMs summarized in Table 2-4 may not be feasible when conducting O&M Covered Activities under emergency conditions. For example, given the timing constraint of an emergency condition, it may not be feasible to implement AMM O&M-4, Conduct Environmental Screening Process and AMM O&M-5, Conduct Pre-Activity Surveys and Monitoring of Class 2 Activities. SCE maintains a biologist on call to support avoidance and minimization of biological resources for activities occurring under emergency conditions.

2.3.1 Aerial Inspection

Between six and 12 times each year, SCE would conduct aerial inspections of all transmission line facilities located in the HCP Planning Area from helicopters and fixed-wing aircraft. Inspectors would assess the condition of facilities such as structures (TSP and LSTs), insulators, conductors, access roads, and any encroaching woody vegetation. These inspections would be conducted as needed to ensure continued public safety and system reliability.

SCE plans to inspect all transmission line facilities located in the 23-mile-long HCP Planning Area, including the section of the existing Big Creek Rebuild line that is located in the north-south section of the HCP Planning Area. SCE would conduct aerial inspections six to 12 times per year (180–360 times over the term of the ITP), depending on weather conditions during any given year. Thus, aerial inspections would involve 138–275 miles of flight over the HCP Planning Area per year, and 4,140–8,280 miles of flight over the 30-year term of the ITP. Inspection planes and helicopters would fly at an altitude of 150–2,000 feet and would not take off or land inside the HCP Planning Area.

Table 2-3 Acreage of Operations and Maintenance Land Disturbance by Covered Activity and Disturbance Category			
Covered O&M Activity	Acreage by Land Disturbance Category (acres east of FKC[1] in parentheses)		
	Facility Footprint (graded and maintained clear of vegetation)	High Disturbance Work Area (graded, compacted, and revegetated)	Low Disturbance Work Area (not graded, not compacted, and revegetated)[2, 3]
Major TSP and LST Structure Repair (Section 2.3.7)	–	–	0.68 (0.27)
TSP Replacement (Section 2.3.8)	–	–	1.48 (0.74)
LST Replacement (Section 2.3.9)	–	–	0.74 (0.74)
Major Conductor and OPGW Repair (Section 2.3.10)	–	–	21.84 (16.84)
Repair/Replacement of Bird Flight Diverters (Section 2.3.11)	–	–	3.6 (1.63)
Access Road Maintenance (Section 2.3.12)	–	–	I
Road Drainage System and Stormwater Diversion Structure Maintenance and Replacement (Section 2.3.13)	0.08 (0.08)[4]	–	1.22 (1.22)
Installation of Storm Water Pollution Prevention Plan Best Management Practices (Section 2.3.14)	–	–	I
Vegetation Management—Tree Pruning (Section 2.3.15)	–	–	5.4 (–)
ROW Management—Brush and Weed Abatement (Section 2.3.16)	–	–	I
Total Acreage per Land Disturbance Category	**0.08 (0.08)**	**–**	**34.96 (21.44)**

Notes: LST = lattice steel tower; OPGW = optical ground wire; ROW = right-of-way; TSP = tubular steel pole

[1] FKC = Friant-Kern Canal

[2] Acreages include area disturbed outside of facility footprints created during construction Covered Activities.

[3] I = acreage entirely included in a graded and maintained facility footprint.

[4] Based on mean area outside of road for existing drainage systems and stormwater diversion structures (110 square feet) and 30 new drainage systems/stormwater diversion structures extending outside of access road facility footprint during implementation of the habitat conservation plan.

Source: Data compiled by SCE in 2013

Table 2-4 Avoidance and Minimization Measures of Operations and Maintenance Covered Activities		
Number	**Title**	**Description**
O&M-1	Prepare Operation and Maintenance Environmental Compliance Plan	At the time of completion of construction, an Operations and Maintenance Environmental Compliance Plan will be prepared to guide personnel conducting Covered Activities during the HCP term. This plan will provide guidelines for resource protection and will provide maps of sensitive resources and appropriate buffers to be implemented within the HCP Planning Area (see AMM O&M-3 below).
O&M-2	Conduct Environmental Awareness Training for Workers	SCE personnel and SCE contract workers performing O&M Covered Activities within the HCP Planning Area must undergo training through the WEAP before they begin implementing Covered Activities. This training includes a description of biological resources that could occur at the activity site; the laws and regulations that protect these resources; identification of protected biological resource characteristics and existing locations within the HCP Planning Area; environmental requirements of the HCP, including all relevant conservation measures and the environmental responsibilities of each worker; and consequences if requirements are not met. Information will be provided to field personnel, so that SCE field personnel can identify special-status species and suitable habitats to support these species within the transmission line corridor in order to minimize disturbance to these resources. Copies of the final HCP and the ITP must be on-site and easily available to monitors and all workers implementing HCP Covered Activities. Upon completion of the WEAP, workers shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to the agencies upon request. SCE qualified biological monitors will conduct the WEAP training and be on-site daily to ensure compliance with the HCP and AMMs.
O&M-3	Map Environmentally Sensitive Areas	There will be formal designation of all Environmentally Sensitive Areas on the project's database for avoidance during implementation of the O&M Covered Activities. Covered Species and associated habitats will be incorporated onto field maps that SCE field personnel and contractors will use while conducting O&M Covered Activities to limit the timing of specific activities or restrict activities unless an SCE biologist is present. SCE personnel and contractors shall consult their field maps to ensure that protected resources identified in the maps are avoided. If these resources cannot be avoided, SCE personnel shall notify Corporate Environmental Services for guidance. The boundaries of the O&M activity footprint as well as Environmentally Sensitive Areas will be delineated in the field through the placement of high-visibility flagging, stakes, and/or fencing.
O&M-4	Conduct Environmental Screening Process	SCE has an Environmental Screening Process for ground-disturbing activities (EHS-EP0DR-002). This is an internal process for screening ground-disturbing, O&M Covered Activities within natural land cover types or on public land. It requires SCE project planners, technical specialists, and/or construction personnel to complete an Environmental Screening Form (ESF) to initiate an environmental review before the commencement of construction or ground-disturbing Covered Activities. The internal ESF process aids SCE in the assessment of protected resources, including biological, cultural, and jurisdictional waters, which have a potential to occur in the area prior to the start of work; and provides avoidance and minimization requirements that must be implemented during work.
O&M-5	Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities	Pre-activity surveys and monitoring will be conducted for scheduled, nonemergency Class 2 O&M Covered Activities planned in the designated Environmentally Sensitive Areas of the HCP Planning Area (see AMM O&M-3). Surveys will include sweeps of the area and avoidance of sensitive resources.
O&M-6	Stay on Existing Access Roads	All SCE and SCE contract worker vehicles, including heavy equipment used during O&M Covered Activities (i.e., patrol vehicles and water trucks used during insulator washing) will remain within the existing access road prism (i.e., drivable surface, shoulders, and cut/fill slopes), structure pads, and disturbed areas that are associated with the specific O&M Covered Activity to the greatest extent possible.

Table 2-4 Avoidance and Minimization Measures of Operations and Maintenance Covered Activities		
Number	**Title**	**Description**
O&M-7	Restrict Vehicle Speeds and Travel	Vehicles will maintain a speed limit of 20 mph along private dirt roads in the right-of-way of the HCP Planning Area. Nighttime vehicle traffic will be limited to emergencies. If nighttime travel is necessary, the speed limit shall be reduced to 10 mph. Off-road travel in the HCP Planning Area that is not specifically identified as an O&M Covered Activity will be prohibited.
O&M-8	Prohibit Pets	Pets are prohibited by SCE personnel and contractors within the HCP Planning Area over the term of the permit.
O&M-9	Restrict Equipment Fueling and Maintenance near Waterways	Fueling and maintenance of vehicles and other equipment are prohibited within 250 feet of a vernal pool, stock pond, wetland, stream, or other aquatic habitat or waterway unless a bermed and lined refueling area is constructed.
O&M-10	Control Erosion near Waterways and Suitable Habitat for Covered Species	As discussed in Section 2.3.14, Installation of Storm Water Pollution Prevention Plan Best Management Practices, erosion control measures will be implemented where necessary and prior to any land disturbance, to reduce erosion and avoid sedimentation into jurisdictional waters of the U.S. and waters of the State, including drainages and seasonal wetlands, as well as habitat occupied by Covered Species when Covered Activities have potential to cause soil erosion.
O&M-11	Implement Fire Prevention and Control Plan	SCE personnel and SCE contract workers will follow all guidelines set forth in the Fire Prevention and Control Plan, which will be developed as a portion of the Operation and Maintenance Environmental Compliance Plan (see O&M-1). At a minimum, the following guidelines will be included in the plan: • SCE and/or its contractors will have water tanks and/or water trucks sited/available in the HCP Planning Area for fire protection. • All workers will be required to park vehicles away from dry vegetation. • All maintenance vehicles will have fire suppression equipment. • All diesel- and/or gasoline-operated engines, both stationary and mobile, and all flues used in any Covered Activities and camp operations will be equipped with spark arresters. Spark arresters are not required on equipment powered by exhaust-driven turbo-charged engines or motor vehicles equipped with a maintained muffler as defined in PRC Sections 4442 and 4443.
O&M-12	Revegetate Temporarily Disturbed Areas	Based on landowner consent and SCE rights, areas temporarily disturbed, outside of SCE access roads and TSP/LST structure pads will be revegetated by loosening compacted soils, and, in grasslands, applying a seed mix that is certified as weed free.
O&M-13	Remove Trash	All food-related trash and microtrash (e.g., nuts, bolts, and wires) shall be disposed of in closed containers and removed daily from the HCP Planning Area where O&M Covered Activities occur.
O&M-14	Prepare and Implement Noxious Weed and Invasive Plant Control Plan	SCE will develop and implement a Noxious Weed and Invasive Plant Control Plan for Class 2 O&M activities consistent with standard best management practices.
Notes: AMM = avoidance and mitigation measure; ESF = Environmental Screening Form; HCP = habitat conservation plan; ITP = incidental take permit; LST = lattice steel tower; mph = miles per hour; O&M = operations and maintenance; PRC = California Public Resources Code; SCE = Southern California Edison; TSP = tubular steel pole; USFWS = U.S. Fish and Wildlife Service; WEAP = Worker Environmental Awareness Program Source: Data compiled by SCE in 2013		

2.3.2 ROUTINE LINE PATROLS IN THE HABITAT CONSERVATION PLAN PLANNING AREA

SCE plans to conduct routine line patrols within the HCP Planning Area three to six times a year (i.e., 90–180 times over the permit term). Routine line patrols would be conducted by SCE personnel driving a light-duty vehicle (e.g., a pickup truck) along SCE access roads and on TSP and LST structure pads. On occasion, a heavier vehicle, such as a bucket truck or line truck, may be used in place of a patrol vehicle. Patrol personnel would also leave vehicles and may walk off of roads or pads during the patrol.

Patrol personnel would visually inspect TSPs and LSTs for damage to insulators, foundations, and structural components. Minor repairs identified during these patrols that could be done with hand-held tools would sometimes be performed immediately, but repairs usually would be performed later as a separate activity. In addition to inspecting the TSPs and LSTs, patrol personnel would visually check the land immediately adjacent to (i.e., within 100 feet of) access roads and the transmission line from the patrol vehicles (driving on access roads and TSP and LST structure pads), or from adjacent areas accessed on foot, for tree clearances and potential fire hazards. This visual check could identify trees growing into the line that may require pruning. (See Section 2.3.15 for a description of tree pruning.)

Routine line patrols would normally occur during daylight hours, but could be conducted at night or during inclement weather when damage to facilities is suspected. As discussed under AMM C-4 and AMM O&M-7, patrol personnel would conform to the HCP Planning Area's daytime speed limit of 20 miles per hour (mph) at all times, especially at dawn and dusk when San Joaquin kit fox are most active. Nighttime travel would be limited to emergency patrols on SCE access roads and public roads. Should nighttime patrols become necessary, the speed limit would be reduced to 10 mph. Off-road travel outside of the access roads or outside structure pads would be prohibited.

2.3.3 OPTICAL GROUND WIRE TESTING

SCE would test the fiber-optic cables that are in the OPGW four times per year at the splice cases attached to the top of certain TSP and LST structures (see Section 2.2.5.3 for definition of splice case). These splice cases would be attached to the TSPs and LSTs adjacent to the pulling-tensioning-splicing work areas used to string conductors (see Section 2.2.5.3, Stringing of Conductors and Optical Ground Wires). Technicians would drive a truck-mounted splicing lab to TSP and LST structure pads. At these structures, the technicians would climb the TSP or LST and remove the splice case, perform fiber splicing and testing on the ground, then climb the TSP or LST and remount the splice case.

2.3.4 MINOR LATTICE STEEL TOWER AND TUBULAR STEEL POLE STRUCTURE REPAIR

Minor repairs to LSTs and TSPs would be performed on the LST or TSP structure pads, or performed from the drivable surface of access roads (i.e., 16-foot-wide surface of access roads; see Section 2.2.2, Construction of New Access Roads). These minor repairs would consist of the replacement of defective or broken insulators, some repair of cross arms, and some replacement of damaged steel sections of LSTs.

SCE personnel would transport tools and materials to each work area for minor LST and TSP repairs either on a line truck or utility truck traveling on access roads, by helicopter, or by foot. "Live Line" tools, chain hoists, various hand tools, ladders, ropes, and slings would be used to replace cross arms and insulators on existing LSTs and TSPs.

Minor repairs of LSTs and TSPs would be conducted as needed. Based on its experience with the repair needs of new LST and TSP structures on other transmission lines, SCE estimates that minor repairs to LST and TSP structures could occur once per year, and up to 30 times during the ITP term.

2.3.5 MINOR CONDUCTOR REPAIR

Minor conductor repairs are those that could be performed from the drivable surface of access roads and/or LST and TSP structure pads (i.e., all equipment transported along roads and operated from these locations). Minor conductor repairs would not require installation of guard poles because conductors would not come in contact with vegetation or other structures during the repair. Conductor repairs that are covered by this HCP but do not meet these criteria are discussed in Section 2.3.10, Major Conductor Repair and Optical Ground Wire Replacement.

Minor conductor repairs entail fixing broken strands of the conductor. SCE crews perform this type of repair by applying an armor rod or a patch splice, both of which are done from a man lift or a spacer cart. Based on its experience with the repairs needed by new conductors elsewhere, SCE estimates that a minor conductor repair would occur up to six times during the ITP term.

2.3.6 INSULATOR WASHING

The polymer insulators installed on the new Cross Valley Line during assembly of TSP and LST structures (see Section 2.2.4.4, Assembly and Erection of Structures) generally would not require periodic washing with water to prevent buildup of contaminates (e.g., dust, salts, and droppings) and to reduce the possibility of arcing, which can result in circuit outages and potential fires. However, in some situations, washing may be necessary. These situations include towers becoming coated in bird lime as a result of bird roosting and the dropping of fire retardant from aerial tankers landing on TSP and LST structures.

In the HCP Planning Area, insulator washing activities would take place from a vehicle stopped on the drivable surface of an existing access road or on the structure pad of a TSP or LST. Insulators are mounted on TSP or LST arms. To wash insulators, a washer truck would be used with a person standing on the ground spraying a fine mist of deionized water from a hand-held hose. Each insulator would be sprayed for 1–5 minutes. A fine mist would be used to prevent the washing from damaging the insulator's coating. This fine mist would evaporate before returning to the ground, but water accumulating on insulators and other hardware would drip off and reach the ground. SCE plans to wash insulators on one to 10 structures as needed every year.

2.3.7 MAJOR TUBULAR STEEL POLE AND LATTICE STEEL TOWER STRUCTURE REPAIR

Major repairs to TSP and LST structures are those repairs for which some work would occur outside of the drivable surface of access roads or outside TSP and LST structure pads. All work, however, would be performed within the boundaries used during construction of TSPs and LSTs (i.e., structure pad and structure work area) (see Section 2.2.4, Construction of New Transmission Line Structures).

Major repairs to TSPs and LSTs would consist of cross-arm repairs and replacements of steel segments of an LST requiring larger areas than those discussed for minor TSP and LST repairs (see Section 2.3.5). The structure work areas outside of structure pads and road surfaces used for major TSP and LST repairs would not be cleared, grubbed, graded, or otherwise prepared; however, vehicles, heavy equipment, and materials may be used in these work areas. All vehicles and equipment would be transported along access roads to structure pads and LST and TSP structure work areas. Equipment used to perform major repairs to TSP and LST structures would include truck-mounted, wheeled, or tracked cranes; flatbed trucks; hydraulic jacking equipment; and bucket trucks. Repair crews would use this equipment to remove damaged components (cross-arms, attached hardware, and steel segments of LSTs) and to assemble and install replacement components. As part of a repair, they may attach a tensioned cable to the TSP or LST structure to add stability. One end of the cable would be attached to the structure and the other end anchored to the ground with an "anchor" in the structure pad.

Major TSP/LST repairs would use only a portion of the TSP and LST structure work areas surrounding structure pads in the HCP Planning Area. These work areas would be delineated during construction of the Cross Valley Line and represent the zones to which TSP/LST structure construction and repair activities would be confined (see Section 2.2.4.1, Preparation of Tubular Steel Pole and Lattice Steel Tower Structure Pads).

SCE repair crews would use a maximum of 25 feet by 60 feet (0.034 acre) of the TSP and LST structure work areas for equipment operation and placement of materials when replacing damaged components, and a comparable adjacent work area (an additional 0.34 acre) when moving vehicles and equipment before and after replacement. Therefore, a total of 0.064 acre would be needed for each major TSP/LST repair.

Based on its experience with the repair needs of new TSPs/LSTs on other transmission lines, SCE estimates that up to 10 TSPs or LSTs would require a major repair during HCP implementation. Based on the percentage of structures located east of the Friant-Kern Canal, four of the repairs would occur east of the canal. During HCP implementation over the ITP term, major repairs to TSP and LST structures would disturb land on up to 0.68 acre of the HCP Planning Area (i.e., 0.064 acre for each of the anticipated 10 major repairs), of which up to 0.27 acre is located east of the Friant-Kern Canal. Upon completion of each repair, all disturbed land in the TSP and LST structure work areas would be revegetated as described previously in Section 2.2.4.5, Revegetation of Crane Pads.

2.3.8 Tubular Steel Pole Replacement

TSP replacement involves replacing the TSP structure, but not the foundation to which the replacement TSP structure would be mounted. To replace a TSP, SCE crews would use the drivable surface of access roads, the TSP structure pad, the TSP structure work area, and the crane pad associated with the TSP (see Section 2.2.4, Construction of New Transmission Line Structures). Although the crane pad and TSP structure work area outside the TSP structure pad would not be cleared during TSP replacement, vegetation in these areas would be crushed and the land disturbed.

Equipment used to remove and replace TSPs would include truck-mounted, wheeled or tracked cranes; flatbed trucks; hydraulic jacking equipment; and bucket trucks. After partial disassembly of the TSP by the maintenance crew, a crane would be used to lift the TSP (in two or more pieces) off of its foundation and place it on one or more flatbed trucks. These trucks would remove the damaged TSP from the HCP Planning Area via access roads, to be recycled and/or disposed of at a licensed landfill. SCE would use access roads to transport the replacement TSP to the TSP structure pad in two or more sections on flatbed trucks. After initial assembly, the maintenance crew would use a crane to install the replacement TSP on the existing foundation and attach the conductors and OPGW to it.

TSP replacement would use most of the TSP structure work area delineated during construction (see Section 2.2.4.1, Preparation of Tubular Steel Pole and Lattice Steel Tower Structure Pads) and the associated crane pad (see Section 2.2.4.2, Preparation of Crane Pads). Based on its experience with new TSPs on other transmission lines, SCE estimates that up to two TSPs would require replacement during HCP implementation, and one of these replacements could be located east of the Friant-Kern Canal. Because the portion of crane pads and TSP structure work areas outside of the TSP structure pads would occupy 0.21 to 0.74 acre, two TSP replacements would disturb up to 1.48 acres, of which 0.74 acre could be located east of the Friant-Kern Canal. (The acreage of TSP structure pads [i.e., 0.25 to 0.27 acre] is not included in these disturbance totals because TSP structure pads are maintained clear of vegetation.)

After installation of the replacement TSP and removal of equipment and materials, all disturbed land in work areas outside of TSP pads (i.e., TSP structure work area and crane pad) would be revegetated, as described in Section 2.2.4.5, Revegetation of Crane Pads.

2.3.9 LATTICE STEEL TOWER REPLACEMENT

To replace an LST, SCE equipment would use the drivable surface of access roads, the LST structure pad, the LST structure work areas, and the crane pad associated with the LST. The LST structure pads and crane pads were delineated and prepared as part of "Construction Line Structures" (see Section 2.2.4.2). Although the crane pad and LST structure work area outside of the LST structure pad would not be cleared, vegetation in these areas would be crushed and the land disturbed.

LST replacement would involve replacing both the LST structure and the footings on which it was mounted. To replace an LST, SCE personnel would use flatbed and bucket trucks, hydraulic jacking equipment, truck- or tread-mounted augers, wheeled or tracked cranes, water trucks, ready-mix-concrete trucks, backhoes, and miscellaneous support vehicles.

The maintenance crew would disassemble the hardware attached to the LST (e.g., insulators, arms) and the steel sections of the LST, temporarily storing the disassembled pieces in the LST structure work area before loading them on flatbed trucks. These trucks would remove the disassembled LST components from the HCP Planning Area via access roads to be recycled and/or disposed of at a licensed landfill. To support conductors and the OPGW, the SCE crew may place poles on the structure pad during LST replacement.

An LST would be supported by four reinforced-concrete footings 15–49 feet deep. The SCE crew would remove the upper portion of the existing LST footings and construct new footings for the replacement LST. A backhoe would be used to excavate the land around the base of the foundation to expose approximately 2–3 feet. The concrete would be jackhammered to that level and removed; the steel reinforcement would be cut away and removed. The SCE crew would remove cut steel reinforcement and jackhammered concrete from the HCP

Planning Area on flatbed trucks via access roads, to be disposed of at a licensed landfill. The SCE crew would then fill and compact the excavated holes using a backhoe.

After removal of the existing footings, an auger would be used to excavate four holes for replacement footings as described in Section 2.2.4, Construction of New Transmission Line Structures. SCE crews would then set rebar cages in each new footing hole, and concrete would be poured in from a ready-mix-concrete truck. Depending on footing height, diameter, and depth, 15–100 cubic yards of concrete would be delivered to the LST structure site for the four footings. As with the removed LST footings, the replacement footings would extend 1–4 feet above ground, depending on site-specific conditions and engineering requirements.

SCE would use access roads to transport the steel sections and hardware of the replacement LST to the LST pad on flatbed trucks. After initial assembly, the maintenance crew would use a crane pad and a crane to install the replacement LST on the new foundation and reattach the conductors and OPGW to it.

LST replacement would use most of the delineated LST structure work area (see Section 2.2.4.1, Preparation of Tubular Steel Pole and Lattice Steel Tower Structure Pads). Based on its experience with new LSTs on other transmission lines, SCE estimates that up to one LST would require replacement during the ITP term for HCP implementation. This LST may be located east of the Friant-Kern Canal. Because the portion of crane pads and LST structure work areas located outside of the LST structure pad would occupy 0.40 to 0.74 acre, one LST replacement would disturb up to 0.74 acre, and this replacement could occur east of the Friant-Kern Canal. (The acreage of LST structure pads [i.e., 0.25 to 0.52 acre] is not included in these disturbance totals because LST structure pads are maintained clear of vegetation.)

After installation of the replacement LST and removal of equipment and materials from outside of the LST structure pad, all disturbed land in LST structure work areas outside of LST structure pads would be revegetated (see Section 2.2.4.5, Revegetation of Crane Pads).

2.3.10 MAJOR CONDUCTOR REPAIR AND OPTICAL GROUND WIRE REPLACEMENT

This O&M Covered Activity consists of repairing damaged conductors and repairing or replacing the OPGW (see Section 2.2.5.3). This would involve disturbance of pulling-tensioning-splicing work areas (both low disturbance and high disturbance pulling-tensioning-splicing work areas) and guard structure work areas outside of drivable access road surfaces and the TSP/LST structure pads. Repairs to damaged conductors that could be performed without disturbing areas outside of drivable access road surfaces and TSP/LST structure pads would be considered minor conductor repairs (see Section 2.3.5).

The major repair of conductors involves removing and replacing damaged conductors. For this activity, SCE equipment would use existing access roads and TSP/LST structure pads previously delineated and constructed (see Section 2.2.4.1, Preparation of Tubular Steel Pole and Lattice Steel Tower Structure Pads). SCE equipment also could potentially use off-road travel corridors that were delineated during construction (see Section 2.2.5.1, Placement of Guard Poles) to access some locations along the transmission line.

Based on its experience with new transmission lines elsewhere, SCE estimates that up to two 1,200-foot-long segments of conductor would be repaired in the HCP Planning Area during plan implementation. SCE crews would use existing TSP and LST structure pads and, as necessary, existing intervening guard poles, to conduct pulling-tensioning-splicing operations for each of these two repairs. All guard pole work areas (and associated off-road travel corridors) would have been used previously during construction (see Section 2.2.5.1, Placement of Guard Poles), but they were never graded or compacted and were revegetated.

Also, based on its experience with new transmission lines elsewhere, SCE estimates that the OPGW would be replaced between a pair of TSPs/LSTs in the HCP Planning Area two times during HCP implementation. Each of these replacements would require the use of existing TSP and LST structure pads and, as necessary, existing intervening guard poles, to conduct pulling-tensioning-splicing operations. Each replacement would also involve removing and reattaching the bird flight diverters attached to the OPWG using helicopters. This operation would involve no additional heavy equipment or work areas in addition to those otherwise necessary to replace the OPGW.

During major repairs to conductors and OPGWs, SCE crews would use existing TSP and LST structure pads and, as necessary, existing intervening guard poles that were previously established during construction activities (both low disturbance and high disturbance pulling-tensioning-splicing work areas). It would not be necessary to grade these areas again, but restored vegetation would be crushed and the land surface disturbed by the vehicles and other equipment used in these work areas. Each of the two conductor repairs and two OPGW repairs would use existing TSP and LST structure pads and, as necessary, existing intervening guard poles. Together, the eight largest work areas used for major repairs to conductors and OPGWs would total 16.59 acres.

In addition, major repairs to conductors can involve placing guard poles to protect public and private roads, as well as communication and electrical lines crossed by the transmission line. These guard poles would be installed at the same 78 locations where guard poles were placed during construction (see Section 2.2.5.1, Placement of Guard Poles), except that one new guard pole site may be necessary during HCP implementation.

SCE crews would use the same access roads or off-road travel corridors as those described in Section 2.2.5.1, Placement of Guard Poles. An additional off-road travel corridor to a new guard pole guard structure may need to be constructed if the area is not accessible from roads and other delineated off-road travel routes used during construction. Should off-road travel be necessary, SCE crews would use off-road travel corridors (i.e., 12-foot-wide corridor) to access the site of the guard pole. Within the HCP Planning Area, 650 feet is the maximum distance of off-road travel (i.e., the maximum distance from a TSP/LST structure pad or access road) that could be necessary to place a guard pole at a location used during construction or at a new location. Thus, up to 0.18 acre could be disturbed by off-road travel associated with the temporary placement of a single guard pole.

The work area required to install guard poles (i.e., guard pole work area) would range from 0.17 acre to 0.87 acre (see Section 2.2.5.1, Placement of Guard Poles). Based on its experience with other new transmission lines, SCE estimates that up to five guard poles, including one new structure location, would be used to support five major repairs to conductors and OPGWs during implementation of the HCP. Thus, up to 4.35 acres could be disturbed in existing and new guard pole work areas for installing guard poles.

The total area that would be disturbed by major repairs to conductors and OPGWs is the sum of pulling-tensioning-splicing site disturbance (up to 16.59 acres), guard pole site disturbance (up to 4.35 acres), and the off-road travel potentially associated with these activities (up to 0.90 acre). Thus, the total area of vegetation and land disturbed by major conductor and OPGW repairs would be up to approximately 21.84 acres, of which up to approximately 16.84 acres is located east of the Friant-Kern Canal.

As the final step of each repair, after the use of pulling-tensioning-splicing work areas, guard pole work areas, and off-road travel corridors ends, these 21.84 acres would be revegetated (see Section 2.2.4.5, Revegetation of Crane Pads).

2.3.11 Repair/Replacement of Bird Flight Diverters

The installed bird flight diverters (see Section 2.2.5.4, Installation of Bird Flight Diverters) would require periodic repair or replacement. Some of these repairs and replacements would be performed during the replacement of the OPGW (see Section 2.3.10, Major Conductor Repair and Optical Ground Wire Replacement). However, based on its experience with new bird flight diverters on other transmission lines, SCE estimates that 20 flight diverters would need to be repaired or replaced at other times during implementation of the HCP. Many of these repairs and replacements would be done from the drivable surface of access roads or TSP/LST structure pads by maintenance crews using bucket trucks, or by helicopter. Nonetheless, some of these replacements would require off-road travel by a bucket truck.

In a worst-case scenario, all 20 repairs and replacements would require off-road travel. These repairs and replacements would be performed at a maximal distance from TSP/LST structure pads and access roads. In this worst-case scenario, each repair or replacement would require off-road travel in a corridor approximately 12 feet wide and 650 feet long (an area of 0.18 acre). Thus, the 20 repairs and replacements under this Covered Activity would disturb vegetation and land on 3.6 acres of the HCP Planning Area during implementation of the HCP. Based on the number of bird flight diverters east and west of the Friant-Kern Canal, up to 1.63 acres of this disturbance would occur east of the canal. Once the repair/replacement is complete, all land disturbed in these temporary off-road travel corridors would be revegetated as described previously in Section 2.2.5, Stringing of Conductors and Optical Ground Wires.

2.3.12 Access Road Maintenance

SCE plans to perform routine maintenance to the drivable surface of all SCE access roads in the HCP Planning Area each year during the 30 years of HCP implementation. This routine maintenance would involve smoothing the drivable surface of the road and filling potholes. SCE conducts routine maintenance of access roads in the spring.

SCE also would perform local repairs to roads as needed. These repairs would differ from annual routine maintenance in that maintenance crews would repair cut and fill slopes that have failed onto the road or within the road shoulder. These failures would be filled with the displaced material, compacted, and revegetated (as described in Section 2.2.2, Construction of New Access Roads). Additional off-road travel may be needed to conduct these repairs. Equipment used for access road maintenance would include road graders, bulldozers, loaders, backhoes, and hand tools. This equipment would be operated within the facility footprint of access roads (i.e., drivable surface, shoulder/berm, and cut/fill slopes).

2.3.13 Road Drainage System and Stormwater Diversion Structure Maintenance and Replacement

Access roads would require repair and replacement of stormwater diversion structures (e.g., water bars) and road drainage systems (e.g., drainage dip crossings and McCarthy drains) during the 30-year ITP term. These structures would be installed during construction to protect access roads in areas with greater topography that are susceptible to erosion from water runoff (see Section 2.2.2.5, Installation of Road Drainage Systems and Stormwater Diversion Structures). These structures would be repaired, replaced, and installed within the facility footprint of access roads (i.e., drivable surface, shoulder, and cut and fill slopes) or road drainage system/diversion structures.

Equipment used to repair or replace these structures would include graders, backhoes, excavators, ready-mix-concrete trucks, water trucks, and hand tools. All of this equipment would be operated only within the facility footprints of access roads.

Repair and replacement of drainage systems and stormwater diversion structures would disturb areas on the road shoulders and cut and fill slopes that were revegetated after the construction of access roads (see Section 2.2.2.6, Revegetation). On cut and fill slopes and adjoining road shoulders, SCE crews repairing and replacing these drainage systems and stormwater diversion structures often could perform all work within the facility footprint of the access road. However, the combined area of the a drainage system's or stormwater diversion structure's facility footprint and the work area for the repair or replacement could measure up to 25 feet by 75 feet (0.04 acre).

Based on its experience maintaining and replacing drainage systems and stormwater diversion structures on new access roads, SCE estimates that 75 stormwater diversion structures (e.g., water bars) and road drainage systems (e.g., drainage dip crossings and McCarthy drains) would be repaired or replaced during implementation of the HCP (i.e., two to three per year). SCE also estimates that for up to 30 of these repairs/replacements (one per year), the area needed to repair and replace these features could extend beyond facility footprints of access roads (i.e., drivable surface, shoulder, and cut and fill slopes). In a worst-case scenario where the area needed for repair or replacement of road drainage systems and stormwater diversion structures was of maximal size and entirely outside the facility footprint of the access road, these 30 repairs and replacements would result in vegetation and land disturbance of 1.3 acres. As presented in Table 2-3, 0.08 acre of this land would be graded and maintained clear of vegetation, and 1.22 acres would not be graded or compacted, and would be revegetated after the activity.

2.3.14 Installation of Storm Water Pollution Prevention Plan Best Management Practices

SWPPP BMPs are materials and temporary structures installed around all active disturbed areas to ensure that pollutants and their sources associated with construction are controlled. (Pollutants include sediment carried by runoff.)

In conjunction with other O&M Covered Activities, these BMPs would be installed along the perimeter of all facility footprints and work areas (both low disturbance and high disturbance work areas) to prevent runoff from leaving construction sites without infiltrating into the soil. BMPs would remain in place until construction is complete and the soil surface has been effectively stabilized, or until other means of controlling runoff and excessive erosion have been implemented (e.g., installing mulch during revegetation).

The materials and temporary structures that SCE would use are described in Section 2.2.7, Installation of Storm Water Pollution Prevention Plan Best Management Practices. The area disturbed by temporary installation of

SWPPP BMPs has been included in the previously described facility footprints and work areas (both low disturbance and high disturbance work areas) affected by O&M activities.

2.3.15 Vegetation Management—Tree Pruning

As part of routine line patrols (see Section 2.3.2, Routine Line Patrols in the Habitat Conservation Plan Planning Area), SCE would identify hazard trees or trees that must be pruned to maintain compliance with State and Federal regulations. These regulations require SCE to maintain a 25-foot clearance between trees and conductors (considering the sway of the conductors), plus the distance of 1 year of tree growth toward conductors. SCE maintains a separation of 25-foot clearance plus 2 years' growth to allow pruning to occur every other year.

The HCP Planning Area consists primarily of annual grassland and agricultural vegetation. However, tree pruning would occur at several locations: where riparian vegetation is adjacent to new conductors at crossings of the St. John's River and Cottonwood Creek; where conductors pass over nine oak trees that are mapped inclusions in grassland east of the Friant-Kern Canal; as needed where conductors pass over trees in developed and agricultural areas; and in the future, where trees may establish at additional locations during the 30-year ITP term.

SCE crews would prune trees from a truck-mounted man-lift with power and hand tools, including chain saws, pole saws, and handsaws. Cut branches would be allowed to fall to the ground. SCE crews would gather cut branches by hand and feed them into a truck-towed chipper. Chipped woody debris would be removed by truck from riparian areas and the larger oak trees beneath conductors, and would be disposed of at a landfill or other facility licensed to receive green waste.

Vegetation trimming is anticipated to remain within the facility footprints of access roads (i.e., drivable surface, shoulder, and cut and fill slopes) or within the TSP and LST structure pads that are maintained clear of vegetation. However, in 30 instances (once each year) during implementation of the HCP, this activity may result in new off-road vehicle travel in a corridor up to 650 feet long and 12 feet wide (0.18 acre) to get to a midspan location. (This is the maximum distance of any potential trimming site from an access road or TSP/LST structure pad.) Because of the distribution of woody vegetation and isolated trees and the location of access roads in the HCP Planning Area, this off-road travel would occur west of the Friant-Kern Canal. Therefore, during the ITP term, up to 5.4 acres of land and vegetation disturbance would occur.

2.3.16 Right-of-Way Management—Brush and Weed Abatement

SCE would clear brush (woody plants) and herbaceous plants from TSP/LST structure pads and from the drivable surface of access roads. SCE crews would mow, disk, and grade herbaceous plants on TSP/LST structure pads, and may also apply herbicide at those locations for fire safety and prevention, consistent with State law and regulatory requirements. Herbicide also may be applied as a spot treatment by hand-held equipment along access roads and structure pads as part of implementing the Noxious Weed and Invasive Plant Control Plan; herbicide application that occurs outside of species-specific buffers (see Chapter 5) is an HCP Covered Activity. Mowing, disking, and grading for these purposes are also HCP Covered Activities.

Brush located adjacent to access roads would be trimmed back to the edge of the road (i.e., shoulder and cut/fill slopes) to prevent its lateral growth into the zone above the road's drivable surface. SCE crews would use a hand-held, gas motor–driven brush-cutter (similar to a "weed whacker" but with a rotating metal blade) and chain saws and mechanical hand saws as necessary to trim brush. Crews would conduct this mowing and trimming while they and their equipment were on TSP/LST structure pads and access roads.

In the HCP Planning Area, outside of the developed land cover type, shrubs are largely restricted to the riparian vegetation at Cottonwood Creek and the St. John's River. No access roads or LST/TSP structure pads are located within these areas. Therefore, brush clearing by SCE crews would be limited to trimming isolated shrubs growing into roads or TSP and LST structure pads. Disturbance of vegetation would occur entirely within the facility footprints of access roads and TSP/LST structure pads.

3 ENVIRONMENTAL SETTING/BIOLOGICAL RESOURCES

This chapter describes the existing environmental conditions for the habitat conservation plan (HCP) Planning Area. This description includes an overview of the physical environment, existing land covers/land uses, and biological resources of the approximately 23-mile-long, 3,356-acre HCP Planning Area. Together with the description of Covered Activities (in Chapter 2), this chapter provides the foundation for the impact analysis presented in Chapter 4.

3.1 ENVIRONMENTAL SETTING

3.1.1 PHYSICAL ENVIRONMENT

3.1.1.1 CLIMATE

The HCP Planning Area is located in the southern San Joaquin Valley. The climate of the southern San Joaquin Valley is characterized by hot, dry summers and mild/cold, moist winters typical of a Mediterranean climate (NOAA, 2004). Winter rains are interspersed with periods of cloudy, foggy, or sunny weather. The average daily low temperatures recorded in the vicinity of the HCP Planning Area (in Woodlake, California) vary from approximately 35 degrees Fahrenheit (°F) in January to 68°F in July. Average daily high temperatures vary from approximately 50°F in January to 98°F in July.

Most of the annual precipitation, which occurs almost entirely as rain, falls between October and May. According to the California Irrigation Management Information System (CIMIS, 2012), the 21-year annual average (1990–2011) for precipitation occurring during these months in the vicinity of the proposed Cross Valley Line (Visalia, California) is 10.29 inches. On average, each year has 76 days with precipitation (NOAA, 2006).

Rainfall in the HCP Planning Area varies substantially from year to year. During 2010–2011, rainfall was somewhat greater than normal, with 16.33 inches falling in the normal precipitation season (October through May). Rainfall during 2011–2012 was well below normal. The Planning Area vicinity received less than 77 percent of average precipitation between October 2011 and May 2012. Approximately 7.9 inches of rainfall occurred during these months (Quad Knopf, 2011a).

3.1.1.2 TOPOGRAPHY/GEOLOGY/SOILS

West of the Friant-Kern Canal (including the north-south portion and east-west portion of the alignment), the HCP Planning Area is characterized by irrigated agriculture with little topographic relief. East of the Friant-Kern Canal, the HCP Planning Area consists of rangeland in hummocky and rolling terrain that is representative of the southern Sierra Nevada foothills (Figure 3-1).

Elevations in the HCP Planning Area range between 350 feet in the north-south portion to approximately 1,300 feet in the hills at the eastern portion (Quad Knopf, 2010a).

According to Mathews and Burnett (1965), the north-south portion of the HCP Planning Area and the westerly portion of the east-west HCP Planning Area are underlain by recent (Pleistocene and Holocene) alluvial fan deposits. The eastern portion of the east-west HCP Planning Area contains areas mapped as metamorphic and granitic rock, including a series of rock outcrops.

Quad Knopf (2010a) identified 13 soil types in the HCP Planning Area, primarily silts, clays, loams, and rocky outcrops. These soils are described in greater detail by the U.S. Natural Resources Conservation Service (NRCS, 2007) and include the following soil types:

- Blasingame Sandy Loam (15 to 30 percent slopes)—The Blasingame component makes up 80 percent of this map unit. This soil type is found on hills and is derived from quartz diorite. The depth to a root-restrictive layer (of rock) is 20–40 inches. This soil is well drained and does not meet hydric criteria.

- Cibo-Rock Outcrop Complex (15 to 50 percent slopes)—The Cibo component makes up 50 percent of the map unit. This soil type is found on hills and develops in residuum from gabbro. The depth to a root-restrictive layer (of rock) is 20–40 inches. This soil is well drained and does not meet hydric criteria.

- Cieneba-Rock Outcrop Complex (15 to 75 percent slopes)—The Cieneba component makes up 55 percent of the map unit. This soil type is found on ridges and hills and has developed from residuum of granitic rock. The depth to a root-restrictive layer is 10–20 inches. This soil is excessively drained and does not meet hydric criteria.

- Exeter Loam (2 to 9 percent slopes)—The Exeter component makes up 85 percent of the map unit. This soil type is found on terraces and valleys and consists of alluvium derived from granitic rock. The depth to a root-restrictive layer (a duripan) is 20–40 inches. This soil is well drained and does not meet hydric criteria. Vernal pools/swales have formed on this soil in the HCP Planning Area.

- Grangeville Silt Loam, Drained (0 to 2 percent slopes)—The Grangeville component makes up more than 90 percent of this map unit. This soil type is found on alluvial fans and valleys and is derived from granitic rock. The depth to a root-restrictive layer is greater than 60 inches. The Grangeville component is moderately well drained, but this soil meets hydric criteria. Vernal pools/swales have formed on this soil in the HCP Planning Area.

- Nord Fine Sandy Loam (0 to 2 percent slopes)—The Nord component makes up 85 percent of this map unit. This soil type is found on floodplains, alluvial fans, and valleys and has developed from alluvium. The depth to a root-restrictive layer is greater than 60 inches. This soil is well drained and does not meet hydric criteria.

- Porterville Clay (0 to 2 percent slopes)—The Porterville component makes up 85 percent of this map unit. This soil type is found on alluvial fans and valleys and has developed from alluvium derived from igneous rock. The depth to a root-restrictive layer is greater than 60 inches. This soil is well drained and does not meet hydric criteria. Vernal pools/swales have formed on this soil in the HCP Planning Area.

- Quonal-Lewis Association (0 to 2 percent slopes)—The Quonal component makes up 70 percent of this map unit. This soil type is found on fan remnants and valleys and has developed from alluvium. The depth to a root-restrictive layer (duripan) is 40–60 inches. This soil is moderately well drained and does not meet hydric criteria.

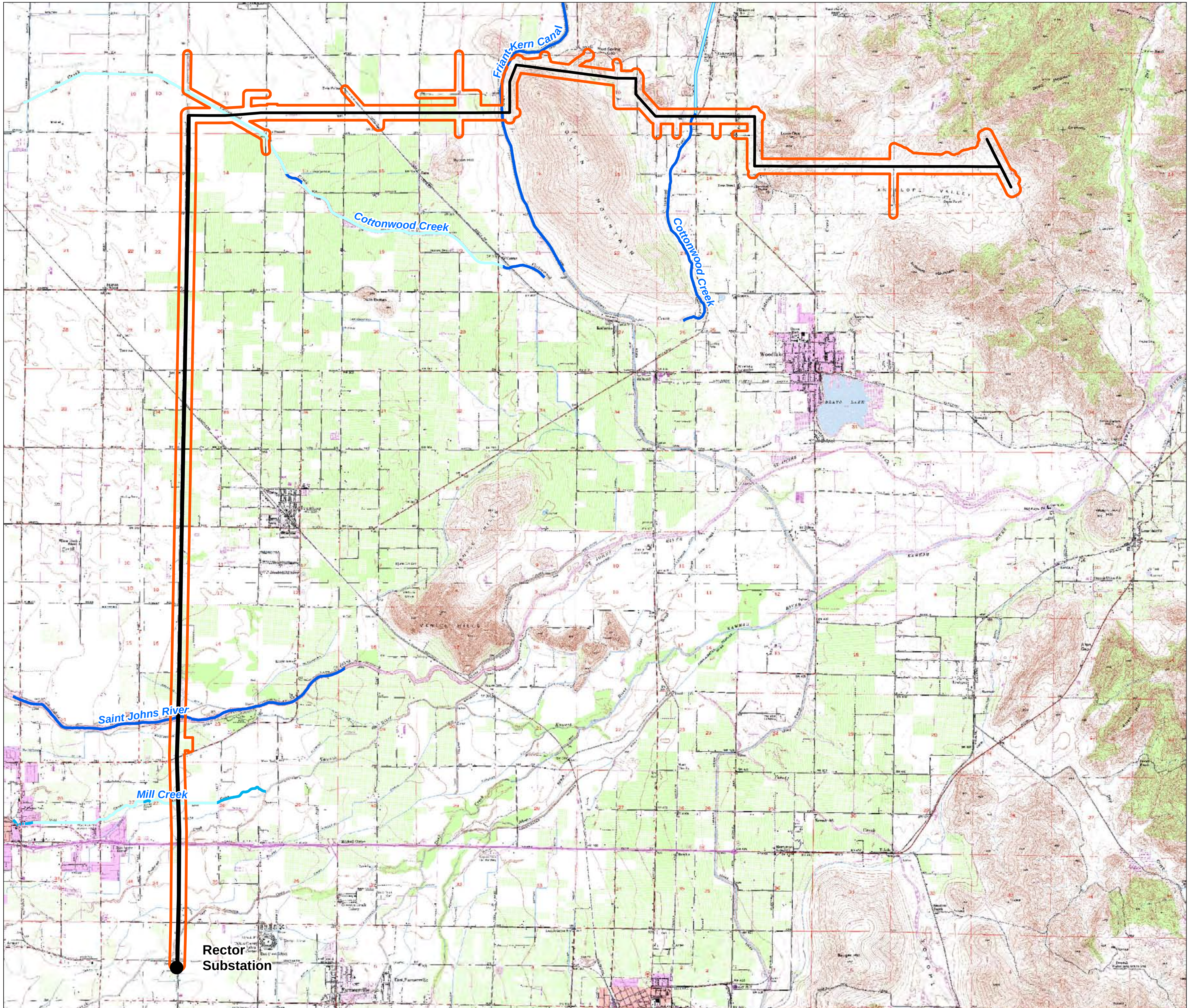


Figure 3-1
Topography of the HCP Planning Area
Cross Valley Line

HCP Planning Area

Cross Valley Line

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

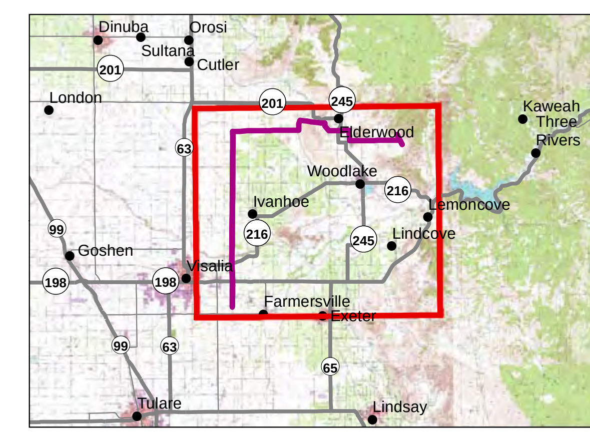
Stream/River: Intermittent

Stream/River: Perennial

N W E S

0 0.5 1 2 Miles

Source: SCE 2/26/2013; NGS USA Topo (2010)



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SCE Cross Valley Line Transmission Project Habitat Conservation Plan

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- Riverwash—Riverwash consists of the material (primary sand and gravel) in the active channels of St. John's River and Cottonwood Creek.
- San Emigdio Loam (2 to 9 percent slopes)—The San Emigdio component makes up 90 percent of this map unit. This soil type is found on alluvial fans and valleys and has developed from alluvium. The depth to a root-restrictive layer is greater than 60 inches. This soil is well drained and does not meet hydric criteria.
- San Joaquin Loam (2 to 9 percent slopes, and 0 to 2 percent slopes)—The San Joaquin component makes up 80 percent of this map unit. This soil type is found on terraces and valleys and has developed from acidic, igneous rock. The depth to a root-restrictive layer (duripan) is 20–40 inches. This soil is moderately well drained and does not meet hydric criteria. Vernal pools/swales have formed on this soil in the HCP Planning Area.
- Tagus Loam (0 to 2 percent slopes)—The Tagus component makes up 85 percent of this map unit. This soil type is found on fan remnants and valleys and has developed from granitic rock. The depth to a root-restrictive layer is greater than 60 inches. This soil is moderately well drained and does not meet hydric criteria.
- Yettem Sandy Loam (0 to 2 percent slopes)—The Yettem component makes up 85 percent of this map unit. This soil type is found on alluvial fans and valleys and has developed from granitic alluvium. The depth to a root-restrictive layer is greater than 60 inches. This soil is moderately well drained and does not meet hydric criteria.

Figure 3-2 illustrates the distribution of these soil types in the HCP Planning Area.

3.1.1.3 Surface Hydrology

The HCP Planning Area is located in the Tulare–Buena Vista Lakes Watershed, defined by the U.S. Natural Resources Conservation Service as an eight-digit Hydrologic Unit Code (HUC) that extends from near Fresno in the north to the foothills of the Sierra Nevada and the Transverse Ranges south of Bakersfield. The entire HCP Planning Area is located in the Upper Kaweah Subbasin of the Tulare–Buena Vista Lakes Watershed. In the Upper Kaweah Subbasin, the Planning Area crosses 10 subwatershed regions (which are 12-digit HUCs) (Figure 3-3). The HCP Planning Area crosses the St. John's River and Cottonwood Creek, which are major riverine features in the Upper Kaweah Subbasin. The St. John's River crosses the north-south portion of the HCP Planning Area just north of the city of Visalia. The river flows to the west, eventually reaching the historical Tulare Lake Bed. The Tulare Lake Bed is essentially dry, and most of the area is now cultivated agriculture. Where the St. John's River crosses the north-south portion of the HCP Planning Area, it flows year-round (Figure 3-3).

Cottonwood Creek flows generally from northeast to southwest, crossing the east-west portion of the HCP Planning Area east of Colvin Mountain. It is channelized as it turns around the eastern base of Colvin Mountain, eventually drying out approximately 3.5 miles south of the east-west portion of the Planning Area.

Mill Creek, another waterway in the north-south portion of the HCP Planning Area, also flows into the historical Tulare Lake Bed. It is channelized in the Planning Area where it is spanned by the transmission line.

In the grasslands, all located east of the Friant-Kern Canal in the east-west portion of the HCP Planning Area, several small natural drainage channels are partially or completely contained in the Planning Area. These channels trend northeast to southwest; average approximately 5 feet in width; and are often sinuous and short, having a defined bed and bank for less than 1 mile. The water in these channels spreads out beyond this length of defined channel and infiltrates the soil before reaching a water body. In addition, artificial features, such as canals and ditches, form a complex network in the cultivated lands of the valley floor in the HCP Planning Area and the surrounding landscape west of the Friant-Kern Canal.

3.1.2 Land Cover Types and Use

3.1.2.1 Regional Overview

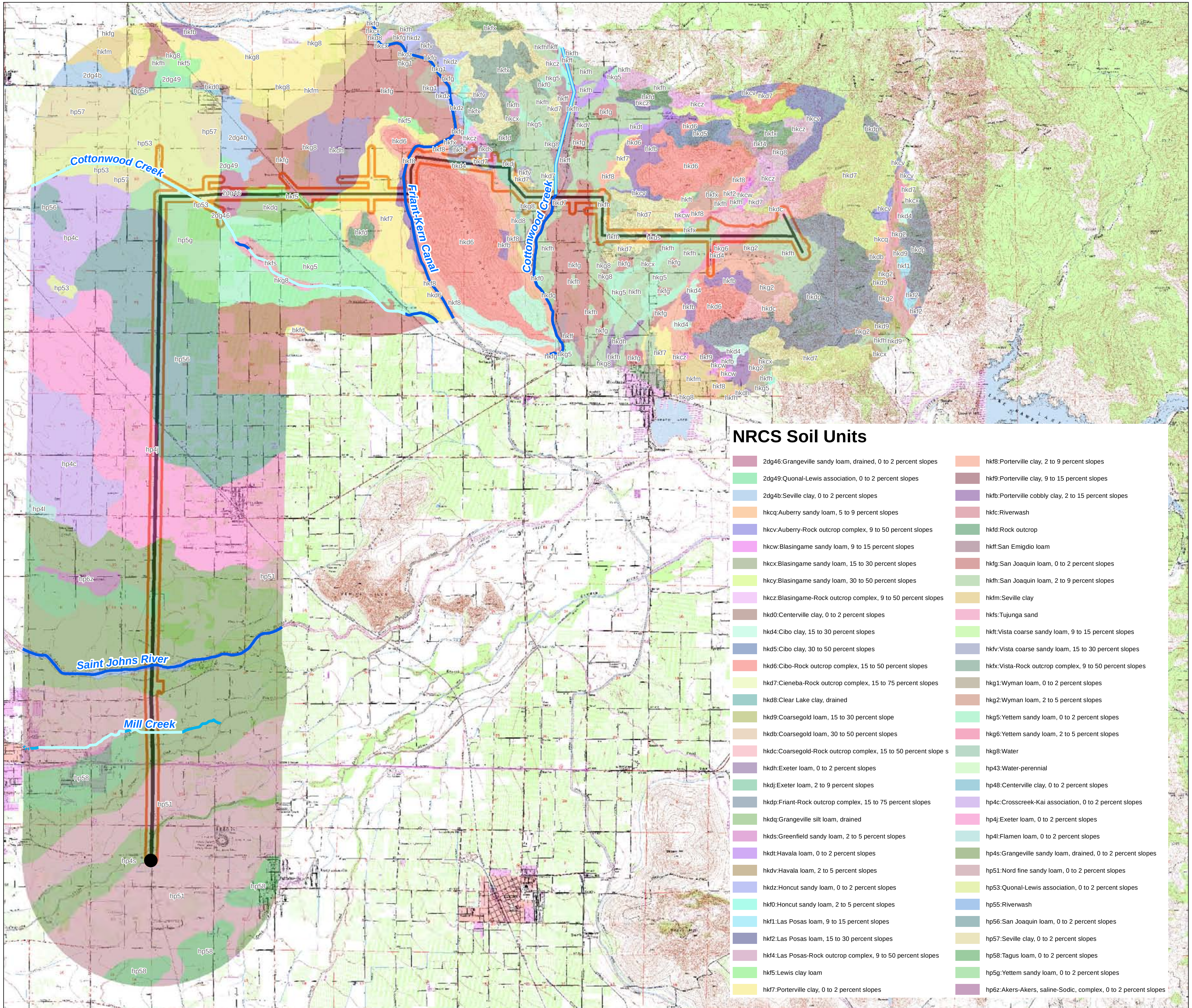
The HCP Planning Area is located in the city of Visalia and the unincorporated portion of Tulare County. West of the Friant-Kern Canal, the surrounding landscape is primarily agricultural and developed land cover, whereas east of the canal, it is primarily annual grassland (Figure 3-4). Of the southern portion of the north-south HCP Planning Area, 1.8 miles are located in the city of Visalia's designated city limits, whereas the remaining 22.1 miles of the Planning Area is located in the unincorporated portion of Tulare County.

The north-south portion of the HCP Planning Area and the east-west portion of the HCP Planning Area, both located west of the Friant-Kern Canal, are characterized primarily by irrigated agriculture and developed land cover (e.g., housing developments) (Table 3-1). The landscape in this portion of the HCP Planning Area has been converted to developed uses and irrigated agricultural production with the exception of some riparian land cover associated with the St. John's River and a few small, isolated patches of annual grassland (Table 3-2, Figure 3-5). Common agricultural crops in the HCP Planning Area include citrus and stone fruit orchards, grape vineyards, and various row crops. The 8 miles of the HCP Planning Area east of the Friant-Kern Canal cross actively grazed rangeland in hummocky and rolling terrain representative of southern Sierra Nevada foothill topography. This area consists of large tracts of natural land cover. The predominant land cover east of the Friant-Kern Canal is annual grassland (Table 3-1), which contains vernal pools/swales in flatter areas, rock outcrops and patches of oak woodland in steeper areas, and riparian vegetation along Cottonwood Creek (Quad Knopf, 2010a). Artificial features, including canals, roads, impoundments, basins, stock ponds, ditches, and some irrigated agriculture, are located in the disturbed areas east of the Friant-Kern Canal.

3.1.2.2 Habitat Conservation Plan Land Cover Types

This section describes each land cover type in the HCP Planning Area based on the land cover mapping, jurisdictional wetland delineation, and branchiopod surveys conducted by Quad Knopf (2010a, 2010b, and 2011a) and ICF International (2013). Table 3-1 lists the 12 HCP land cover types. The mapping of terrestrial land cover types (Figure 3-5) is based on the land cover mapping by Quad Knopf (2010a). The mapping of aquatic and wetland land cover types (Figure 3-6) is based on the wetland delineation (Quad Knopf, 2010b; ICF International, 2013), except for the "puddle" category, which is based on mapping conducted during the branchiopod surveys (Quad Knopf, 2011a). Table 3-2 provides the total acreage of each of the 12 land cover types in the HCP Planning Area.

Figure 3-2
Soils of the HCP Planning Area
Cross Valley Line



NRCS Soil Units

- 2dg46:Grangeville sandy loam, drained, 0 to 2 percent slopes
- 2dg49:Quonal-Lewis association, 0 to 2 percent slopes
- 2dg4b:Seville clay, 0 to 2 percent slopes
- hkcq:Auberry sandy loam, 5 to 9 percent slopes
- hkcv:Auberry-Rock outcrop complex, 9 to 50 percent slopes
- hkcw:Blasingame sandy loam, 9 to 15 percent slopes
- hkcx:Blasingame sandy loam, 15 to 30 percent slopes
- hkcy:Blasingame sandy loam, 30 to 50 percent slopes
- hkcz:Blasingame-Rock outcrop complex, 9 to 50 percent slopes
- hkd0:Centerville clay, 0 to 2 percent slopes
- hkd4:Cibo clay, 15 to 30 percent slopes
- hkd5:Cibo clay, 30 to 50 percent slopes
- hkd6:Cibo-Rock outcrop complex, 15 to 50 percent slopes
- hkd7:Cieneba-Rock outcrop complex, 15 to 75 percent slopes
- hkd8:Clear Lake clay, drained
- hkd9:Coarsegold loam, 15 to 30 percent slope
- hkdb:Coarsegold loam, 30 to 50 percent slopes
- hkdc:Coarsegold-Rock outcrop complex, 15 to 50 percent slope s
- hkdh:Exeter loam, 0 to 2 percent slopes
- hkdj:Exeter loam, 2 to 9 percent slopes
- hkdp:Friant-Rock outcrop complex, 15 to 75 percent slopes
- hkdq:Grangeville silt loam, drained
- hkds:Greenfield sandy loam, 2 to 5 percent slopes
- hkdt:Havala loam, 0 to 2 percent slopes
- hkdv:Havala loam, 2 to 5 percent slopes
- hkdz:Honcut sandy loam, 0 to 2 percent slopes
- hkf0:Honcut sandy loam, 2 to 5 percent slopes
- hkf1:Las Posas loam, 9 to 15 percent slopes
- hkf2:Las Posas loam, 15 to 30 percent slopes
- hkf4:Las Posas-Rock outcrop complex, 9 to 50 percent slopes
- hkf5:Lewis clay loam
- hkf7:Porterville clay, 0 to 2 percent slopes
- hkf8:Porterville clay, 2 to 9 percent slopes
- hkf9:Porterville clay, 9 to 15 percent slopes
- hkfb:Porterville cobbly clay, 2 to 15 percent slopes
- hkfc:Riverwash
- hkfd:Rock outcrop
- hkff:San Emigdio loam
- hkfg:San Joaquin loam, 0 to 2 percent slopes
- hkfh:San Joaquin loam, 2 to 9 percent slopes
- hkfm:Seville clay
- hkfs:Tujunga sand
- hkft:Vista coarse sandy loam, 9 to 15 percent slopes
- hkfv:Vista coarse sandy loam, 15 to 30 percent slopes
- hkfx:Vista-Rock outcrop complex, 9 to 50 percent slopes
- hkg1:Wyman loam, 0 to 2 percent slopes
- hkg2:Wyman loam, 2 to 5 percent slopes
- hkg5:Yettem sandy loam, 0 to 2 percent slopes
- hkg6:Yettem sandy loam, 2 to 5 percent slopes
- hkg8:Water
- hp43:Water-perennial
- hp48:Centerville clay, 0 to 2 percent slopes
- hp4c:Crosscreek-Kai association, 0 to 2 percent slopes
- hp4j:Exeter loam, 0 to 2 percent slopes
- hp4l:Flamen loam, 0 to 2 percent slopes
- hp4s:Grangeville sandy loam, drained, 0 to 2 percent slopes
- hp51:Nord fine sandy loam, 0 to 2 percent slopes
- hp53:Quonal-Lewis association, 0 to 2 percent slopes
- hp55:Riverwash
- hp56:San Joaquin loam, 0 to 2 percent slopes
- hp57:Seville clay, 0 to 2 percent slopes
- hp58:Tagus loam, 0 to 2 percent slopes
- hp5g:Yettem sandy loam, 0 to 2 percent slopes
- hp6z:Akers-Akers, saline-Sodic, complex, 0 to 2 percent slopes

HCP Planning Area

Cross Valley Line

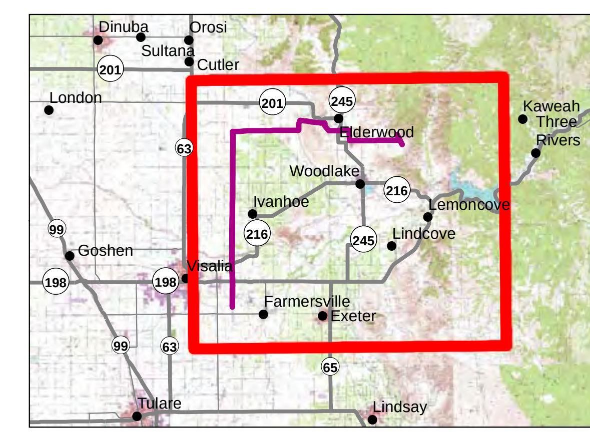
NHD Stream Code

- Artificial Path
- Canal/Ditch
- Connector
- Stream/River: Intermittent
- Stream/River: Perennial

N W E S

0 0.5 1 2 Miles

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for [Tulare County,CA]. Available online at http://www.arcgis.com/apps/OnePane/basicviewer/index.html?appid=a23eb436f6ec4ad6982000dbaddea5ea. Accessed [3/12/2013].



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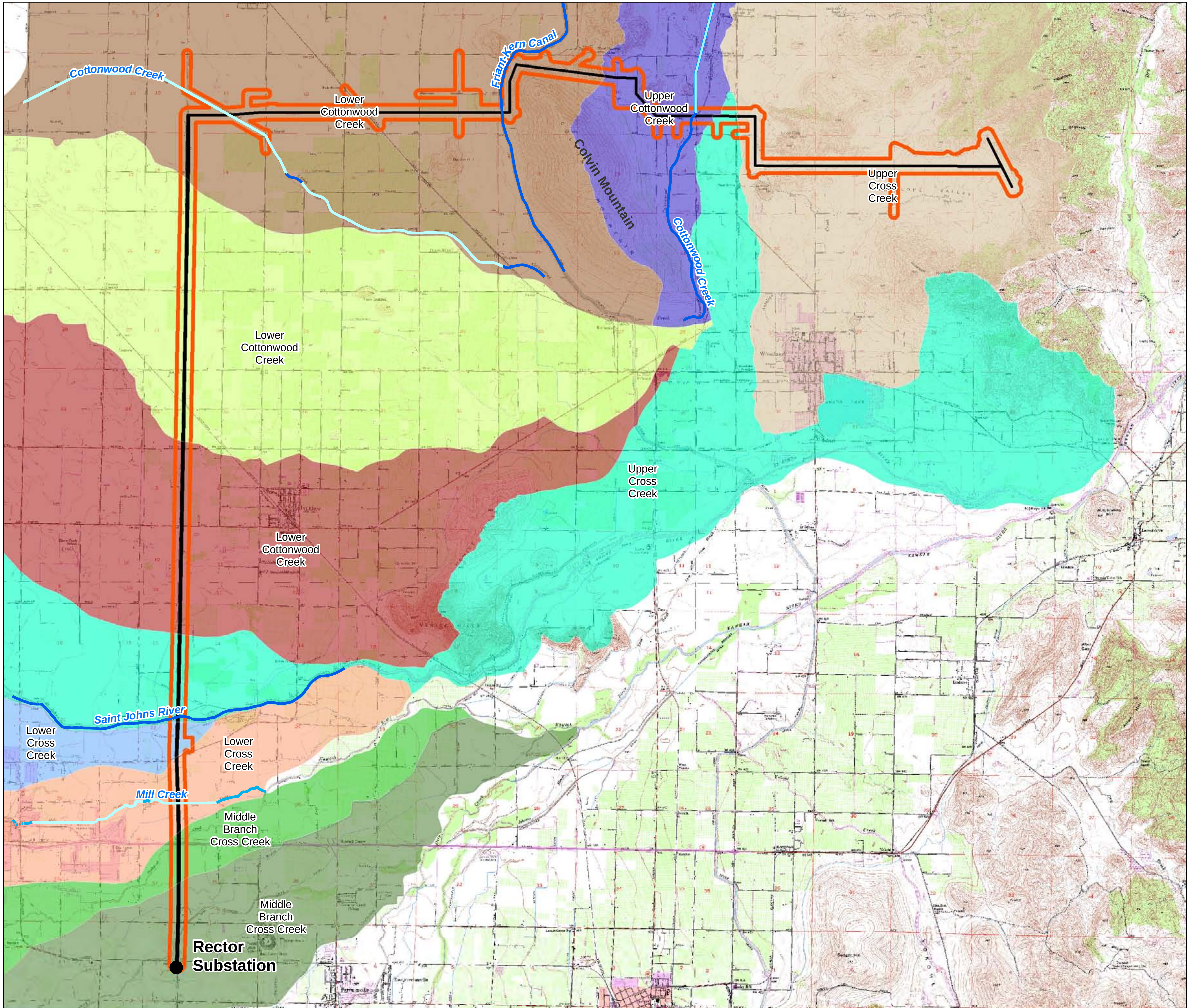


Figure 3-3
12-Digit HUC Subwatersheds of the HCP Planning Area Cross Valley Line

HCP Planning Area
Cross Valley Line

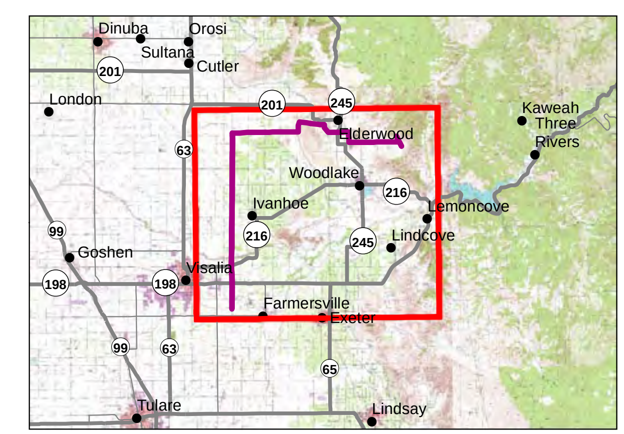
NHD Stream Code
- Artificial Path
- Canal/Ditch
- Connector
- Stream/River: Intermittent
- Stream/River: Perennial

Subwatershed Name
- Antelope Creek
- Cameron Creek
- Cottonwood Ditch-Cottonwood Creek
- Elbow Creek
- Mill Creek
- Mosquito Creek-Cross Creek
- Packwood Creek
- Saint Johns River
- Stone Corral Canyon-Cottonwood Creek
- Wilcox Creek-Cottonwood Creek

N W E S

0 0.5 1 2 Miles

Source: ESRI 2010; SCE 2/26/2013; NRCS



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SCE Cross Valley Line Transmission Project Habitat Conservation Plan

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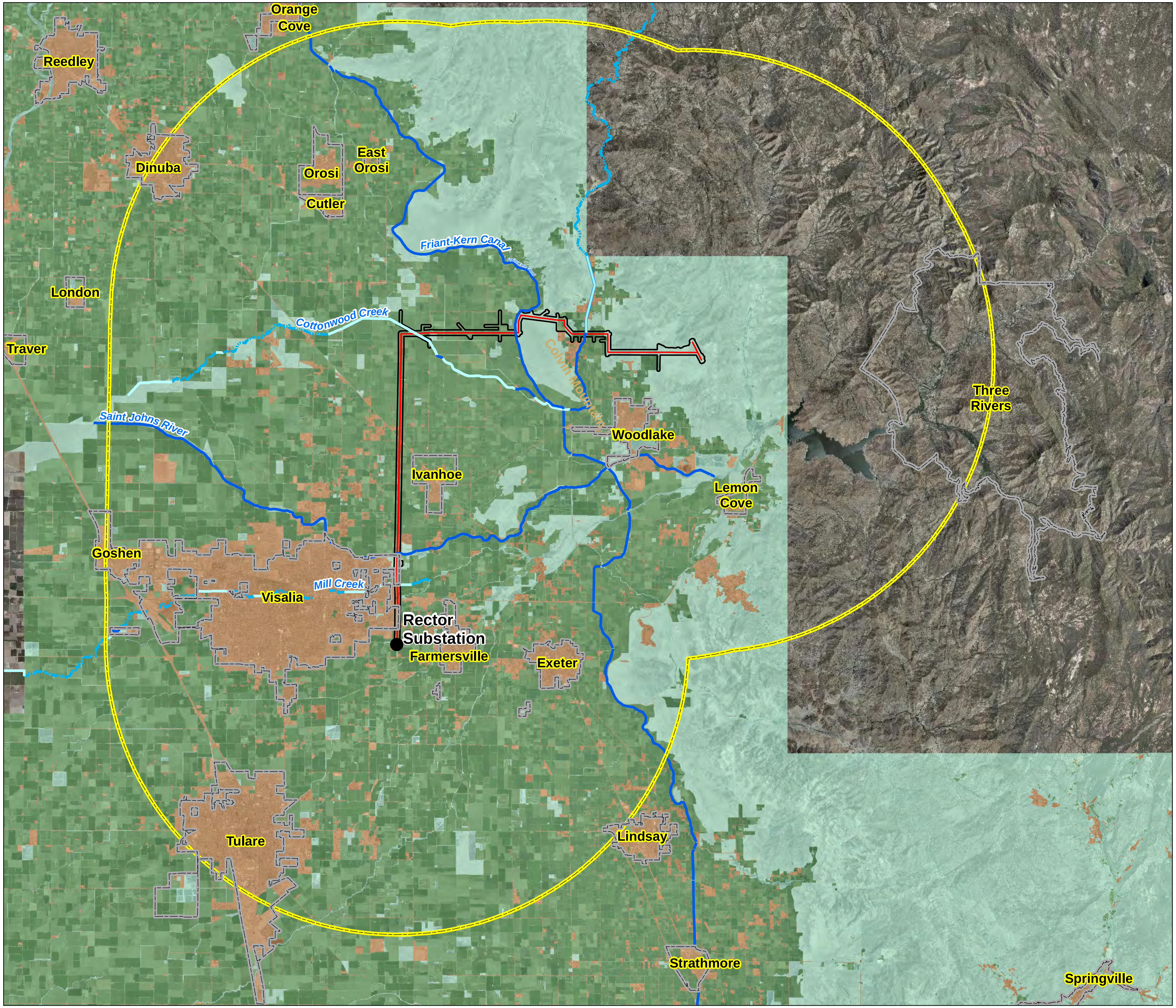
Figure 3-4
Regional Land Cover for the HCP Planning Area Cross Valley Line



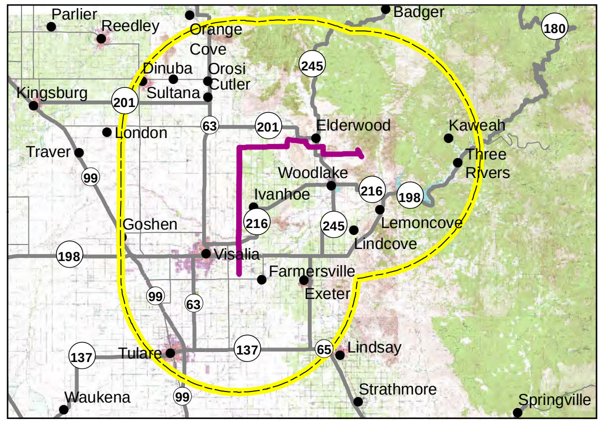
Cross Valley Line
HCP Planning Area
NHD Stream Code
Artificial Path
Canal/Ditch
Connector
Stream/River: Intermittent
Stream/River: Perennial
Landcover
Agriculture
Natural
Developed
10 Mile Buffer of HCP Boundary

Notes: Land Cover (Terrestrial) results are based on surveys conducted during 2010. Due to the scale of the map, the distribution symbology is a graphic representation of actual occurrence area

N W E S

0 1.5 3 6 Miles

Source: ESRI 2010; SCE 2/26/2013, Quad Knopf 2010, Landcover (DWR, 2009), Hydrology NHD (USGS, 2013)



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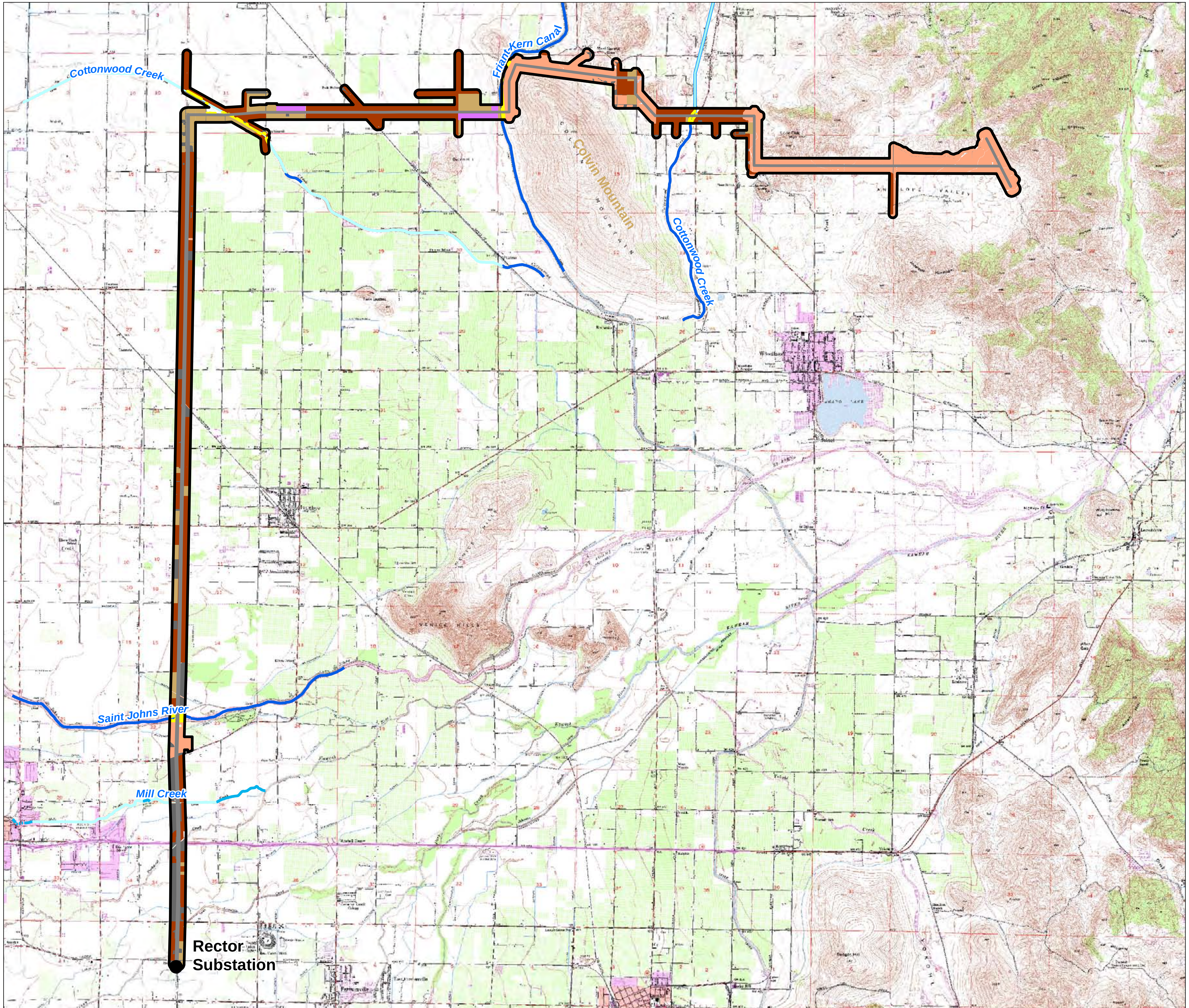


Figure 3-5
Terrestrial Land Cover of the HCP Planning Area Cross Valley Line

- Cross Valley Line
- HCP Planning Area

NHD Stream Code
- Artificial Path
- Canal/Ditch
- Connector
- Stream/River: Intermittent
- Stream/River: Perennial

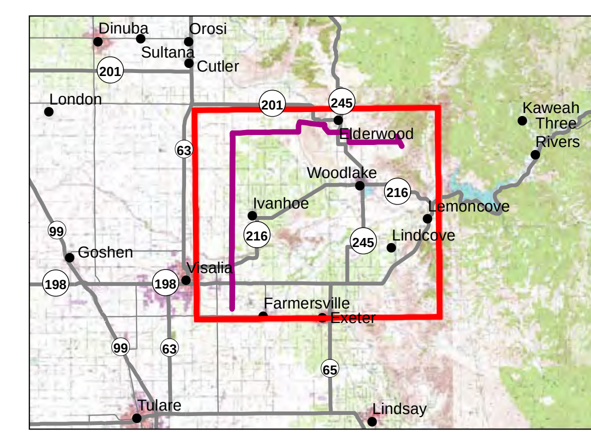
Land Cover - Terrestrial
- Agricultural - Orchard
- Agricultural - Row/Field Crops
- Agricultural - Vineyards
- Annual Grassland
- Developed
- Riparian Forest
- Developed (DWR 2007)

Notes: Land Cover (Terrestrial) results are based on surveys conducted during 2010. Due to the scale of the map, the distribution symbology is a graphic representation of actual occurrence area

N W E S

0 0.5 1 2 Miles

Source: ESRI 2010; SCE 2/26/2013, Quad Knopf 2010



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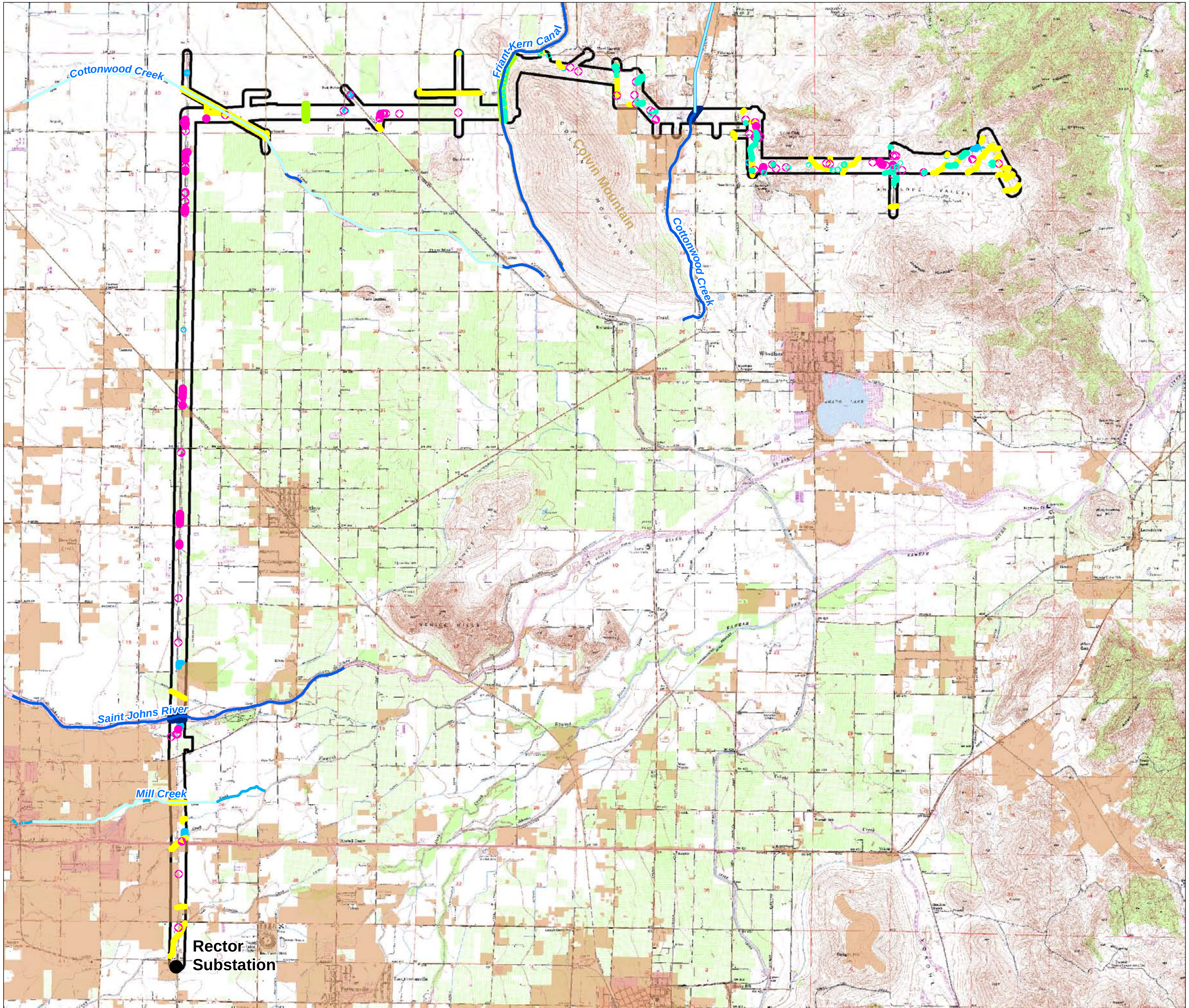

Figure 3-6
Aquatic Land Cover of the HCP Planning Area Cross Valley Line

HCP Planning Area
Cross Valley Line
NHD Stream Code
Artificial Path
Canal/Ditch
Connector
Stream/River: Intermittent
Stream/River: Perennial
Land Cover - Aquatic
Basin/Stock Pond
Ditch
Lined Canal
Puddle
Riverine
Vernal Pool
Developed (DWR 2007)

Notes: Land Cover (Aquatic) results are based on surveys conducted during 2010 and 2011 - 2012. Due to the scale of the map, the distribution symbology is a graphic representation of actual occurrence area.

N
W E
S

0 0.5 1 2 Miles

Source: ESRI 2010; SCE 2/26/2013; Quad Knopf 2010; ICF 2012

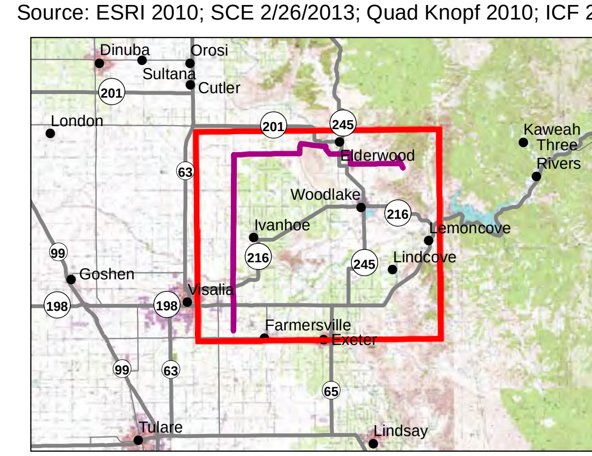

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Table 3-1
Summary of Land Cover Types in the Habitat Conservation Plan Planning Area

Land Cover Type	Description
Natural Land Cover Types	
Annual grassland	Annual grassland is natural vegetation that is dominated by annual nonnative grasses but that also contains a large number of native and nonnative forbs and native grasses. East of the Friant-Kern Canal, annual grassland includes rock outcrops (with some elderberry shrubs associated with them) and patches of live oak trees. Vernal pools and stock ponds are also present in annual grassland east of the Friant-Kern Canal, but these features are mapped as distinct land cover types. This cover type is actively used for grazing domestic livestock.
Vernal pools/swales	Vernal pools are natural shallow depressions that retain water seasonally because of an underlying impermeable soil layer. These pools are sparsely to densely vegetated with native annual grasses and forbs adapted to the ephemeral and variable nature of vernal pool environments. Vernal pools may receive or discharge water to natural drainage pathways called “vernal swales.” Vernal swales often remain saturated for much of the wet season but may not be inundated long enough to develop the vegetation characteristic of vernal pools.
Riparian	Riparian land cover is located adjacent to rivers and creeks and is dominated by willows, valley oak, and other riparian tree and shrub species. It may have an understory of riparian shrubs, vines, and herbaceous plant species. Elderberry shrubs are frequently present in this vegetation. The HCP Planning Area’s riparian land cover borders the St. John’s River and Cottonwood Creek.
Riverine	Riverine land cover is intermittent or continually running water and incudes open water and submerged and emergent vegetation in the channel defined by the ordinary high-water mark. Riverine land cover is often bordered by the riparian land cover type. The HCP Planning Area contains riverine systems associated with the St. John’s River and Cottonwood Creek. Both of these are bordered by riparian forest in the Planning Area boundaries but otherwise flow through a landscape dominated by agricultural land cover outside the Planning Area. Cottonwood Creek can be seasonally dry.
Human-Made Land Cover Types	
Developed	Developed areas consist primarily of buildings, landscaping, pavement, and disturbed land where natural vegetation has been removed. Examples of developed land cover include rural residences, roads, and road shoulders. This land cover type also contains small inclusions of natural land cover.
Agricultural—orchard	Orchards are irrigated agricultural land planted with tree crops, such as plum, citrus, walnut, and olive trees.
Agricultural—vineyard	Vineyards are irrigated agricultural land planted with grapes.
Agricultural—row/field crops	Row and field crops are irrigated agricultural land planted with herbaceous crops, such as row crops, alfalfa, and winter wheat. This category also includes fallow and idle agricultural land and irrigated pastures.
Puddle	Puddles are small, isolated depressions located in or adjacent to roads or in agricultural land cover that become inundated for relatively short periods (i.e., 1–3 weeks) after larger rainstorms. Most commonly, these are ruts created by vehicles They do not support hydrophytic vegetation (as defined by the U.S. Army Corps of Engineers [USACE, 1987; USACE and EPA, 2008] and U.S. Fish and Wildlife Service [USFWS and NMFS, 1996]), and along roads and in agricultural areas they are generally unvegetated.
Basin/stock pond	Basins are human-made features located in areas of agricultural and developed land cover types. Basins support agricultural activities or retain stormwater. They may be unvegetated or vegetated and are intermittently to perennially filled with water. Generally, these features are actively maintained with inlet and/or outlet pipes. This land cover type includes several stock ponds.

Table 3-1 Summary of Land Cover Types in the Habitat Conservation Plan Planning Area	
Land Cover Type	Description
Lined canal	Lined canals are large ditches lined with concrete, polymer, and/or riprap, and several occur in the HCP Planning Area. The largest of these features is the Friant-Kern Canal. These features are mostly unvegetated.
Ditch	Ditches include roadside ditches diverting runoff from roads and unlined drainage and irrigation channels supporting agriculture activities. They are intermittently to seasonally inundated. These maintained features support ruderal vegetation or are unvegetated and pass through culverts at road crossings.

Source: Data compiled by AECOM in 2013 from Quad Knopf, 2010a, 2010b, and 2011a and ICF International, 2013

Table 3-2
Total Acreage of Land Cover Types in the Habitat Conservation Plan Planning Area

Land Cover Type	10.9-Mile-Long North-South Portion of HCP Planning Area	3.9-Mile-Long East-West Portion of HCP Planning Area–West of FKC	9.1-Mile-Long East-West Portion of HCP Planning Area–East of FKC	Total
Developed	315	61	73	450
Agricultural—orchard	787	428	218	1,432
Agricultural—vineyard	0	57	0	57
Agricultural—row/field crops	140	174	10	324
Annual grassland	70	1	978	1,048
Vernal pool/swale	0	0	7	7
Puddle	<1	<1	<1	1
Basin/stock pond	4	7	<1	12
Riparian	4	3	1	8
Riverine	5	0	5	10
Lined canal	7	0	<1	7
Ditch	6	17	5	28
Total Land Cover	**1,339**	**748**	**1,298**	**3,385**

Key: FKC = Friant-Kern Canal.

Note: Columns do not all sum to total because of rounding error.

Source: Data compiled by AECOM in 2013 from Quad Knopf, 2010a, 2010b, and 2011a and ICF International, 2013

Agricultural—Orchard

Orchards in the Planning Area are irrigated agricultural land planted with tree crops, such as plum (*Prunus domestica*), citrus (*Citrus sinensis*), almond (*Prunus amygdalus*), walnut (*Juglans regia*), and olive (*Olea europeana*) trees. The orchard land cover type includes both the deciduous orchard and evergreen orchard habitat types of the California Wildlife Habitat Relationships (CWHR) system (Mayer and Laudenslayer, 1988; DFG, 2005). There are no corresponding natural communities in the Holland or *Manual of California Vegetation* (MCV) classifications of California plant communities (Holland, 1986; DFG, 2005). The HCP Planning Area has 1,432 acres of orchard.

Vineyard

Vineyards in the HCP Planning Area are irrigated agricultural land planted with several cultivars of the domestic grape (*Vitis vinifera*). The vineyard land cover type corresponds to the vineyard habitat type of the CWHR system (Mayer and Laudenslayer, 1988; DFG, 2005). There are no corresponding natural communities in the Holland or MCV classifications of California plant communities (Holland, 1986; DFG, 2005). The HCP Planning Area has 57 acres of vineyard.

Agricultural—Row/Field Crops

Row and field crops are agricultural land planted with herbaceous crops such as alfalfa (*Medicago sativa*) and winter wheat (*Triticum aestivum*). This category also includes fallow and idle agricultural land and irrigated pastures. The row/field land cover type encompasses the irrigated grain crops, irrigated hayfield, irrigated row and field crops, and pasture habitat types of the CWHR system (Mayer and Laudenslayer, 1988; DFG, 2005). There are no corresponding natural communities in the Holland or MCV classifications of California plant communities (Holland, 1986; DFG, 2005). Approximately 324 acres of agricultural row/field crops are located in the HCP Planning Area.

Annual Grassland

The annual grassland land cover in the HCP Planning Area is found primarily in the 8 miles of the HCP Planning Area located east of the Friant-Kern Canal. The annual grassland found in the HCP Planning Area is dominated by nonnative annual grasses but also contains a variety of native grasses and both native and nonnative forbs (Quad Knopf, 2010a). The dominant grasses present include soft chess (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), red brome (*B. madritensis* ssp. *rubens*), wild oats (*Avena barbata* and *A. fatua*), foxtail barley (*Hordeum jubatum*), and annual rye (*Lolium multiflorum*). Common forbs are redstem filaree (*Erodium cicutarium*), fiddleneck (*Amsinckia menziesii*), purple brodiaea (*Dichelostemma pulchella*), pepperweed (*Lepidium nitidum*), blow-wives (*Achyrachaena mollis*), bicolor lupine (*Lupinus bicolor*), and popcorn flower (*Plagiobothrys nothofulvus*).

East of the Friant-Kern Canal, the annual grassland land cover type contains rock outcrops and small patches of live oaks (*Quercus wislizenii*). Several shrubs are associated with the rock outcrops, including poison-oak (*Toxicodendron diversilobum*) and blue elderberry (*Sambucus nigra* ssp. *cerulea*). In addition to these inclusions, vernal pools/swales are intermittently present in the annual grasslands in the HCP Planning Area. (Vernal pools/swales are described as a separate land cover type in this HCP.)

Virtually all annual grassland in the HCP Planning Area is seasonally grazed by cattle and other domestic livestock, although grazing frequencies and intensities vary through the area. The annual grassland land cover type corresponds to the nonnative grassland community (Element Code 42200) of the Holland classification of California plant communities (Holland, 1986) and California annual grassland in the MCV classification of California plant communities (DFG, 2005). The annual grassland land cover type of this HCP corresponds to the annual grassland habitat type of the CWHR system, except that in the CWHR system annual grassland also includes vernal pools/swales, which are a separate land cover type in this HCP (DFG, 2005). Approximately 1,048 acres of annual grassland cover type are located in the HCP Planning Area, with 978 acres located east of the Friant-Kern Canal.

Vernal Pool and Vernal Swale

Vernal pools are depressions in otherwise nearly level topography that are underlain by an impervious layer that prevents infiltration after seasonal precipitation events. The vernal pools in the HCP Planning Area are northern hardpan vernal pools and are underlain primarily by iron-silicate clay hardpan soils. The frequency and duration of seasonal inundation varies among the vernal pools and is determined in part by the size of the basin and size of its watershed, soil depth to the impervious layer, patterns of surface and subsurface water movement, and patterns and amounts of rainfall. Vernal pools in the HCP Planning Area receive or discharge water to drainage pathways called “vernal swales.” Vernal swales often remain saturated for much of the wet season but may not be inundated long enough to develop the vegetation characteristic of vernal pools.

The vernal pools/swales present in the HCP Planning Area (Figure 3-6) are dominated by annual forbs and grasses intermixed in some cases with perennial forbs (Quad Knopf, 2010a and 2010b). Representative plant species in the HCP Planning Area include stalked popcorn flower (*Plagiobothrys stipitatus*), goldfields (*Lasthenia fremontii*), woolly heads (*Psilocarphus tenellus*) toad rush (*Juncus bufonius*), wild barley (*Hordeum murinum*), loosestrife (*Lythrum hyssopifolium*), and pale spikerush (*Eleocharis macrostachya*). Vernal pool species tolerate, or depend on, seasonal flooding or soil saturation during the growing season. Managed grazing on the rangelands where the vernal pools/swales are located helps maintain a habitat mosaic required by special-status plant species.

Approximately 7 acres of vernal pools/swales are located in the HCP Planning Area, all located east of the Friant-Kern Canal (Figure 3-6).

Puddle

In addition to the vernal pools, the extensive rains during the 2010–2011 rainy season created a number of “puddles.” Quad Knopf defines “puddles” as small, isolated depressions (either artificial or natural in origin) that do not any support hydrophytic plants and that are located in or adjacent to roads, in agricultural land cover, or in grassland that becomes inundated for relatively short periods (i.e., 1–3 weeks) after larger rainstorms. Most commonly, these depressions are ruts created by vehicles. They do not support hydrophytic vegetation, and along roads and in agricultural areas, they are generally unvegetated. Vegetated puddles in the HCP Planning Area are characterized by plant species typical of annual grassland or weedy species of developed land cover. These puddles provide habitat for vernal pool species with short life cycles, such as branchiopods and western spadefoot toads. There is not a corresponding habitat or natural community type in the CWHR, Holland, or MCV systems (Holland, 1986; Mayer and Laudenslayer, 1988; DFG, 2005). Approximately 1 acre of puddles is located in the HCP Planning Area.

Basin/Stock Pond

Basins and stock ponds are artificial features managed by landowners. They support agricultural activities or retain stormwater and are frequently dry in summer. They may be unvegetated or bordered by vegetation that may be natural (e.g., adjacent annual grassland) or ornamental (e.g., palms, mulberry). Generally, basins and stock ponds are actively maintained features with inlet and/or outlet pipes. There is not a corresponding habitat or natural community type in the CWHR, Holland, or MCV systems (Holland, 1986; Mayer and Laudenslayer, 1988; DFG, 2005). Approximately 12 acres of basins/stock ponds are located in the HCP Planning Area.

Riparian

Riparian vegetation is a sensitive natural community in California because its extent has been substantially reduced from historical conditions and because it provides important habitat for plant and wildlife species. Much of this land cover is associated with the riverine land cover type. Riparian vegetation occurs along watercourses in the San Joaquin Valley with permanent or intermittent surface water.

Riparian vegetation in the HCP Planning Area is a mix of oaks, willows, cottonwoods, and other riparian plants, supported primarily by the St. John's River and Cottonwood Creek. In the Planning Area, riparian vegetation includes a mixed forest– and valley oak–dominated vegetation that correspond to the Valley Mixed Riparian Forest and Great Valley Oak Riparian Forest, respectively, of Holland's classification of California plant communities (Holland, 1986). The riparian land cover type corresponds to the valley foothill riparian habitat type of the CWHR system (Mayer and Laudenslayer, 1988). The MCV subdivides riparian vegetation in the Central Valley into more than a dozen series of plant communities based primarily on the tree or shrub species that dominates a particular patch (DFG, 2005). Most of these plant communities could occur in the HCP Planning Area during plan implementation.

Valley mixed riparian forests in the HCP Planning Area have an overstory dominated by arroyo willow (*Salix lasiolepis*), Goodding's willow (*S. gooddingii*), valley oak (*Quercus lobata*), and Fremont cottonwood (*Populus fremontii*). Understory species include Himalaya blackberry (*Rubus armeniacus*), blue elderberry, native California grape (*Vitis californica*), and stinging nettle (*Urtica dioica holosericea)*.

Valley oak–dominated land cover in the HCP Planning Area consists of small patches of riparian vegetation (up to 0.03 acre in size) with valley oaks. These patches are remnants of much more extensive valley oak–dominated areas of the eastern San Joaquin Valley in Tulare County. Riparian vegetation along the St. John's River and Cottonwood Creek has been affected by bank clearing, which has reduced the structural diversity of the vegetation and reduced the cover of understory and canopy plants.

Riparian habitats support a diverse assemblage of wildlife species because its structural complexity and association with riverine habitats provide a variety of food and cover. This habitat also provides important movement corridors for wildlife and connectivity to other habitats (Mayer and Laudenslayer, 1988).

Approximately 8 acres of riparian land cover are located in the HCP Planning Area.

Riverine

Riverine land cover consists of seasonal or perennial watercourses that include open water and associated emergent vegetation (e.g., narrow-leaf cattail [*Typha angustifolia*], soft rush [*Juncus effusus*]). Riverine land cover is often bordered by riparian land cover. The HCP Planning Area contains two riverine systems—the St. John's River and Cottonwood Creek. Both are bordered by the riparian land cover type but otherwise flow through a landscape dominated by agricultural land cover. The riverine land cover type corresponds to the riverine habitat type of the CWHR system (Mayer and Laudenslayer, 1988). There are no corresponding natural community types in the Holland or MCV classifications of California plant communities (Holland, 1986; DFG, 2005). Riverine land cover totals approximately 10 acres in the HCP Planning Area.

Lined Canal

Lined canals are water conveyance systems with a concrete or polymer-lined bottom. These unvegetated features provide minimal habitat suitability for wildlife because they lack vegetation and are actively maintained. There is not a corresponding habitat or natural community type in the CWHR, Holland, or MCV systems (Holland, 1986; Mayer and Laudenslayer, 1988; DFG, 2005). Approximately 7 acres of lined canals are located in the HCP Planning Area.

Ditch

Ditches include roadside ditches diverting runoff from roads and drainage and irrigation channels supporting agriculture activities. They are intermittently to seasonally inundated. These artificial and maintained features support weedy species (similar to developed land cover) or are unvegetated and are connected by culverts at road crossings. There is not a corresponding habitat or natural community type in the CWHR, Holland, or MCV systems (Holland, 1986; Mayer and Laudenslayer, 1988; DFG, 2005). Approximately 28 acres of ditches are located in the HCP Planning Area.

Developed

Developed land cover is found in the City of Visalia and Farmersville at the southern terminus of the Planning Area; in the vicinity of Woodlake, located in the east-west portion of the HCP Planning Area; and especially along major roadways (Figure 3-5). Much of the developed land cover in the Planning Area is intermixed with agricultural lands; heavily disturbed, or ruderal, areas; and small patches of remnant natural vegetation. This land cover type includes the ranches, houses, agricultural and commercial buildings, and related roads and facilities in Visalia, Farmersville, Woodlake, and elsewhere throughout the HCP Planning Area (Figure 3-5).

Some disturbed areas in developed land cover are dominated by weedy species, such as prickly lettuce (*Lactuca serriola*), milk thistle (*Silybum marianum*), horseweed (*Conyza canadensis*), telegraph weed (*Heterotheca grandiflora*), and Bermuda grass (*Cynodon dactylon*). Examples of these disturbed areas in the Planning Area include roadsides, ditch banks, vacant lots near urban or agricultural buildings, and other disturbed or highly modified locations. The developed land cover type corresponds to the urban habitat type of the CWHR system (Mayer and Laudenslayer, 1988). There are no corresponding natural communities in the Holland or MCV classifications of California plant communities (Holland, 1986; DFG, 2005). Approximately 450 acres of developed land cover are located in the HCP Planning Area.

3.2 COVERED SPECIES WITHIN THE HABITAT CONSERVATION PLAN PLANNING AREA

This section describes the status, natural history, habitat, and distribution within the HCP Planning Area of each Covered Species. The impacts on the Covered Species anticipated to result from construction and operation and maintenance of the transmission line (HCP Covered Activities) are described in Chapter 4.

3.2.1 HABITAT CONSERVATION PLAN WILDLIFE COVERED SPECIES

3.2.1.1 VERNAL POOL FAIRY SHRIMP (*BRANCHINECTA LYNCHI*)

Status

The vernal pool fairy shrimp is Federally listed as a threatened species. Six subunits (subunits A–F) of vernal pool fairy shrimp Critical Habitat Unit VERTS 26 (USFWS, 2005) are located approximately 1 mile north and west of the HCP Planning Area (Figure 3-7). The HCP Planning Area traverses 8.11 miles of the Tulare Core Area identified in the 2005 vernal pool recovery plan and is located 0.78 mile from the Cottonwood Creek Core Area.

Species Description

The vernal pool fairy shrimp is a small, translucent crustacean 1 to 1.5 inches long found in California's vernal pools. The species features stalked compound eyes, no carapace, and 11 pairs of legs. It ranges in size from 0.5 inch to nearly 1 inch long. The fairy shrimp swims by moving its legs from front to back.

Habitat and Natural History

The vernal pool fairy shrimp is a short-lived crustacean well adapted to the ephemeral nature of its habitat. Typical emergence for the species occurs from December to early May after suitable precipitation events. Vernal pool fairy shrimps are filter and suspension feeders. Their diet mainly consists of unicellular algae, bacteria, and ciliates. They may also scrape algae, diatoms, and protists from the surface of rocks, sticks, and plant stems. The vernal pool fairy shrimp has a breeding strategy uniquely adapted to ephemeral aquatic features. Females deposit eggs, known as cysts, into the sediment on the pool bottom. Cysts may lie dormant for more than a century before hatching (Eriksen and Belk, 1999). The number of cysts produced in a given pool during a single wet season depends on the pool's specific hydrological regime. An extended inundation period can result in the hatching of multiple generations (Eriksen and Belk, 1999).

Vernal pool fairy shrimps have a high potential to occur in a spectrum of vernal pools and inundated features. They occupy a variety of different vernal pool habitats: from small, clear sandstone rock pools to large, turbid and alkaline grassland valley floor pools (USFWS, 2005). Populations of vernal pool fairy shrimp in the Central Valley are located in small swales, earthen pools, and basalt flow depressions that are typically smaller in scale than other branchiopod habitat (Eriksen and Belk, 1999). Pools vary dramatically in size, from 10 hectares to 0.56 square meter (Eriksen and Belk, 1999). Although the species has been collected from large vernal pools, including one that exceeds 25 acres, it tends to occur in vernal pools as small as 0.05 acre in unplowed grasslands (Eriksen and Belk, 1999). Most populations of vernal pool fairy shrimp begin to decline when water temperatures approach 60°F, with populations disappearing at 70°F. Vernal pool fairy shrimp can complete a life cycle within 6–7 weeks in winter and 3 weeks in spring, giving it the ability to inhabit disturbed/constructed sites that are avoided by more habitat-specific species (Eriksen and Belk, 1999). Vernal pool fairy shrimp are capable of completing their life cycles in artificially created ephemeral habitats, including railroad toe-drains, roadside ditches, abandoned agricultural drains, ruts left by heavy construction vehicles, and depressions in firebreaks (Eng et al., 1990).

Distribution

The vernal pool fairy shrimp was described relatively recently (Eng et al., 1990). There is little information about the historical range of this species, but it is known to occur in a wide range of vernal pool habitats in the southern and central portions of the San Joaquin Valley areas of California and in Oregon (USFWS, 2005). The distribution of vernal pool fairy shrimp in the San Joaquin Valley generally occurs in a ring around the margins of the valley near the surrounding foothills. The species has been recorded in all types of vernal pool habitats but has been primarily recorded in smaller and deeper pools (USFWS, 2007a). The U.S. Fish and Wildlife Service (USFWS) Five-Year Review for vernal pool fairy shrimp (USFWS, 2007a) indicated that 108 vernal pool occurrences were recorded in the Southern Sierra Vernal Pool Region, which includes high- and low-terrace landforms from the junction of San Joaquin, Stanislaus, and Calaveras counties south to Tulare County. Portions of Fresno, Madera, Mariposa, Merced, and Tuolumne counties are also included in the region.

Five occurrences of vernal pool fairy shrimp have been documented within 5 miles of the HCP Planning Area (CNDDB, 2013). The nearest recorded vernal pool fairy shrimp occurrences (EOID 844 and EOID 45196) are both approximately 1.5 miles from the HCP Planning Area (Figure 3-8). A record from 1993 (EOID 884) reports that vernal pool fairy shrimp adults were found in two pools approximately 0.8 mile east-southeast of St. Mary's Church between State Route 201 and Sontag Ditch. The other record (EOID 4596) is from March 2001 and reports that vernal pool fairy shrimp adults were found approximately 0.6 mile west of the intersection of Avenue 360 and Road 140, nearly 9 miles north of Visalia (CNDDB, 2013).

Suitable habitat for the vernal pool fairy shrimp occurs east of the Friant-Kern Canal, where vernal pools that are characteristic habitat for the species are found (Figure 3-6). Puddles and artificial impoundments (the basin/stock pond land cover type) such as basins located west and east of the Friant-Kern Canal may provide suitable habitat for vernal pool fairy shrimp. Based on the wetland delineation and results of the branchiopod surveys (Quad Knopf, 2010b and 2011a), 47 vernal pools/swales, 16 basins/stock ponds, and 95 puddles (158 features) located in the HCP Planning Area could provide habitat for vernal pool fairy shrimp.

Results of Habitat Conservation Plan Planning Area Surveys

Quad Knopf (2011a) conducted the first year (2010–2011 wet season) and the second year (2011–2012 wet season) of protocol sampling for vernal pool crustaceans in the HCP Planning Area. Out of 47 vernal pools surveyed, vernal pool fairy shrimp was documented in 13 vernal pools and three puddles (Figure 3-9). All 16 of the water features occupied by vernal pool fairy shrimp are located east of the Friant-Kern Canal in the annual grassland land cover type (Quad Knopf, 2011a).

Because of low rainfall in 2011–2012, wet-season surveys could be completed for only three water features. Nonetheless, vernal pool fairy shrimp were found in one additional pool in 2011–2012.Most of the 16 occupied vernal pools were large wetlands, although three were small puddles. Dry-season sampling was conducted in summer and fall 2012 for the 47 vernal pools and 95 puddles that SCE had permission to access to complete the protocol survey's requirements for determining presence/absence for many of the suitable features. Table 3-3

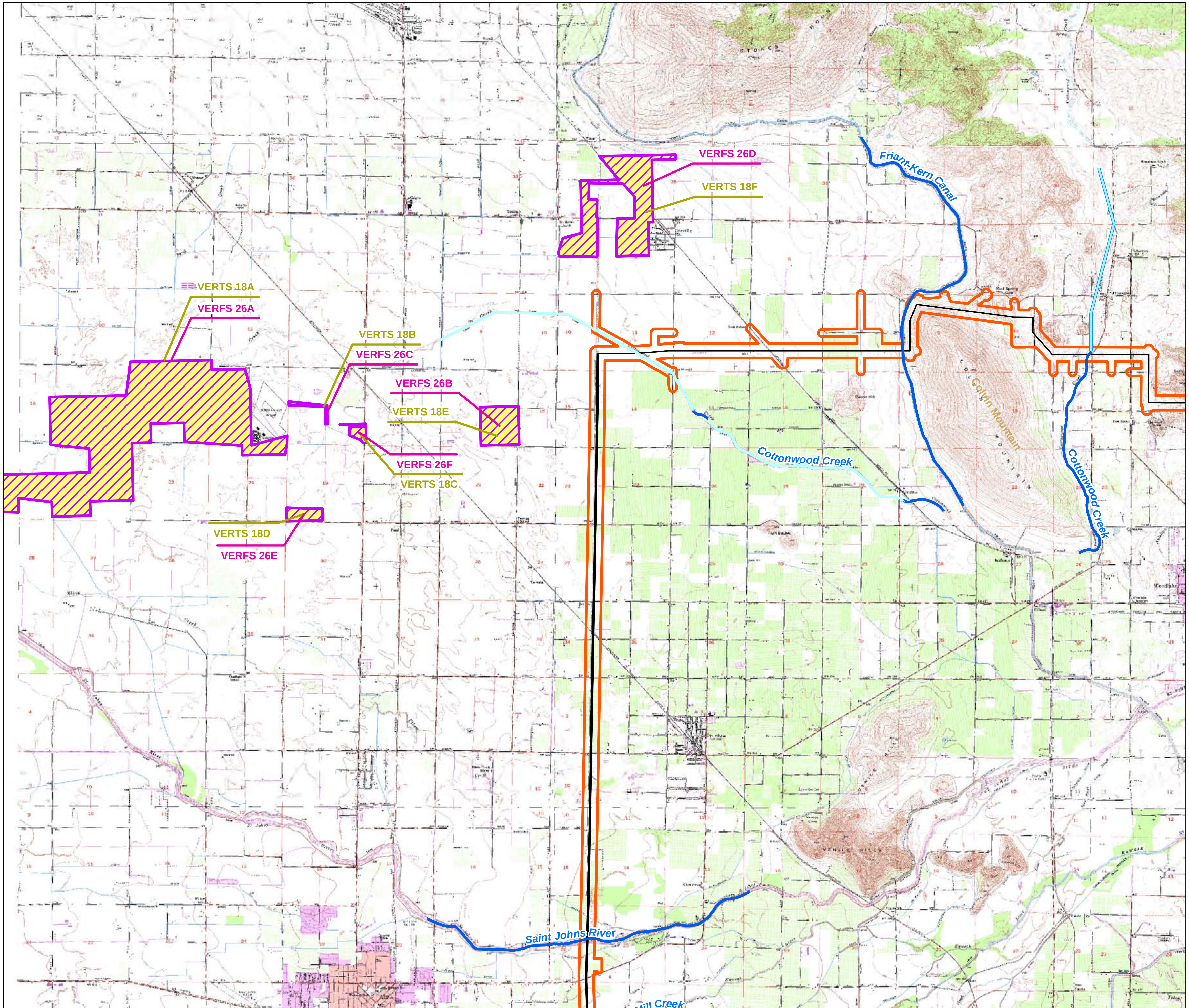

Figure 3-7
Vernal Pool Branchiopod Critical Habitat near the HCP Planning Area Cross Valley Line

Cross Valley Line

HCP Planning Area

Vernal Pool Fairy Shrimp Critical Habitat

Vernal Pool Tadpole Shrimp Critical Habitat

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

VERFS 26B Vernal Pool Fairy Shrimp Critical Habitat Mapunit

VERTS 18E Vernal Pool Tadpole Shrimp Critical Habitat Mapunit

N W E S

0 0.5 1 2 Miles

Source: ESRI 2010; SCE 2/26/2013; USFWS 3/12/2013

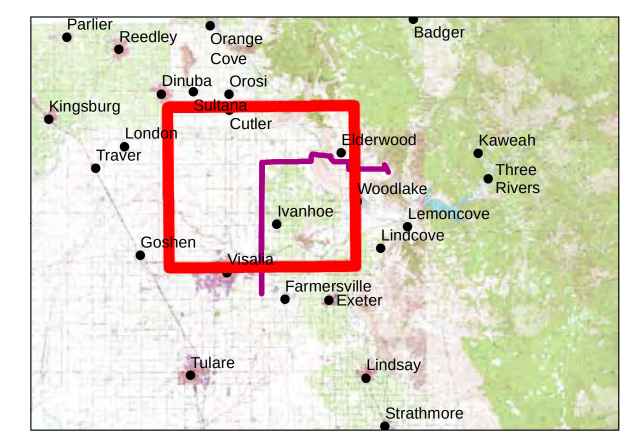

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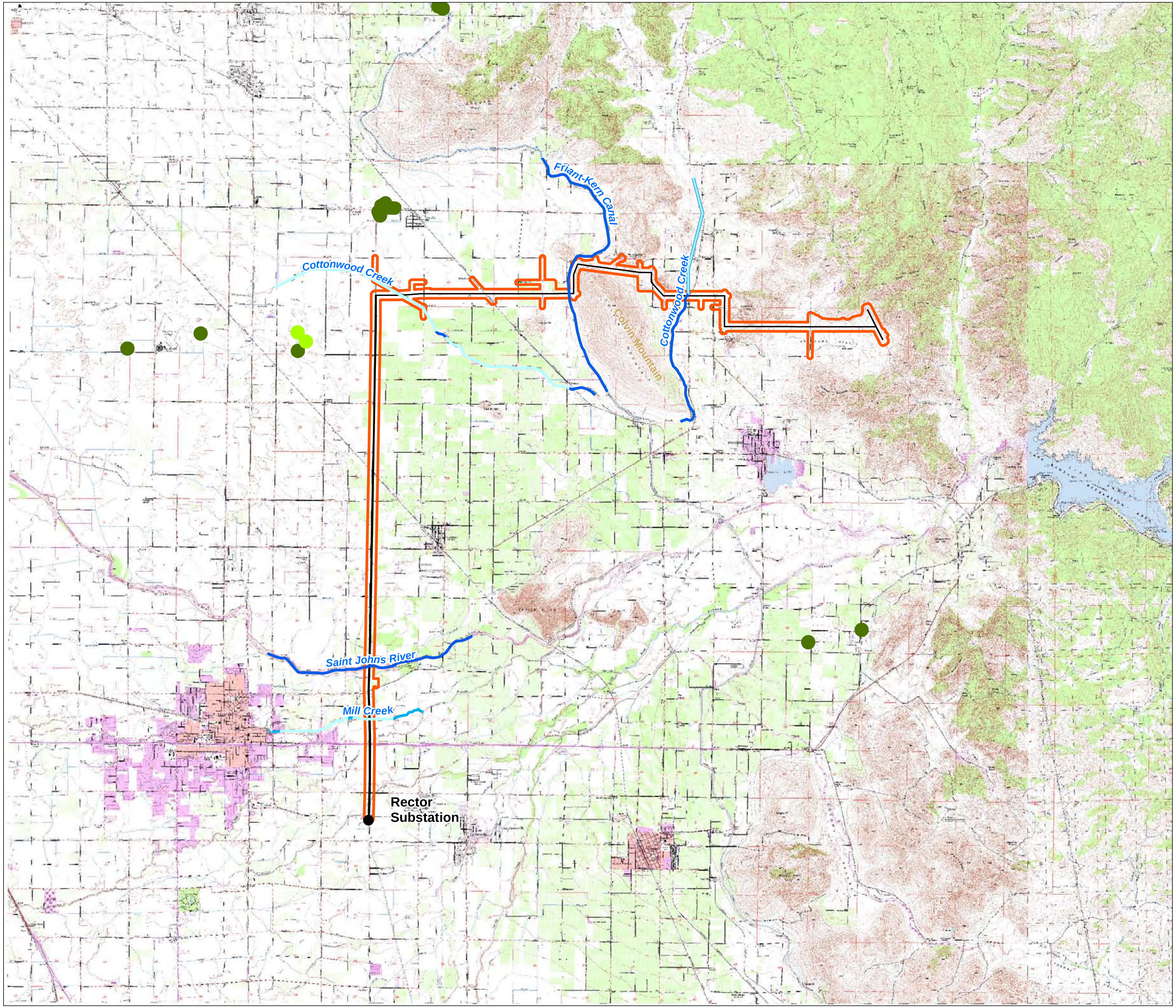
Figure 3-8
Vernal Pool Branchiopod CNDDB Records near the HCP Planning Area Cross Valley Line



- Cross Valley Line
- HCP Planning Area
- vernal pool fairy shrimp
- vernal pool tadpole shrimp

NHD Stream Code

- Artificial Path
- Canal/Ditch
- Connector
- Stream/River: Intermittent
- Stream/River: Perennial

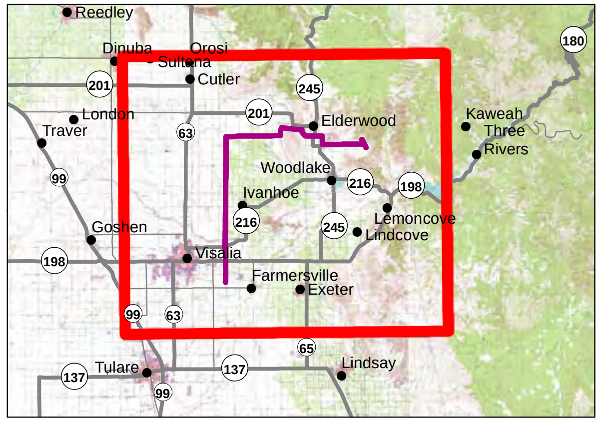
Note:

CNDDB - California Natural Diversity Database (3/12/2013)
Vernal Pools have been exaggerated to increase visibility

N
W E
S

0 1 2 4
Miles

Source: ESRI 2010; SCE 2/26/2013; DFG 3/05/2013



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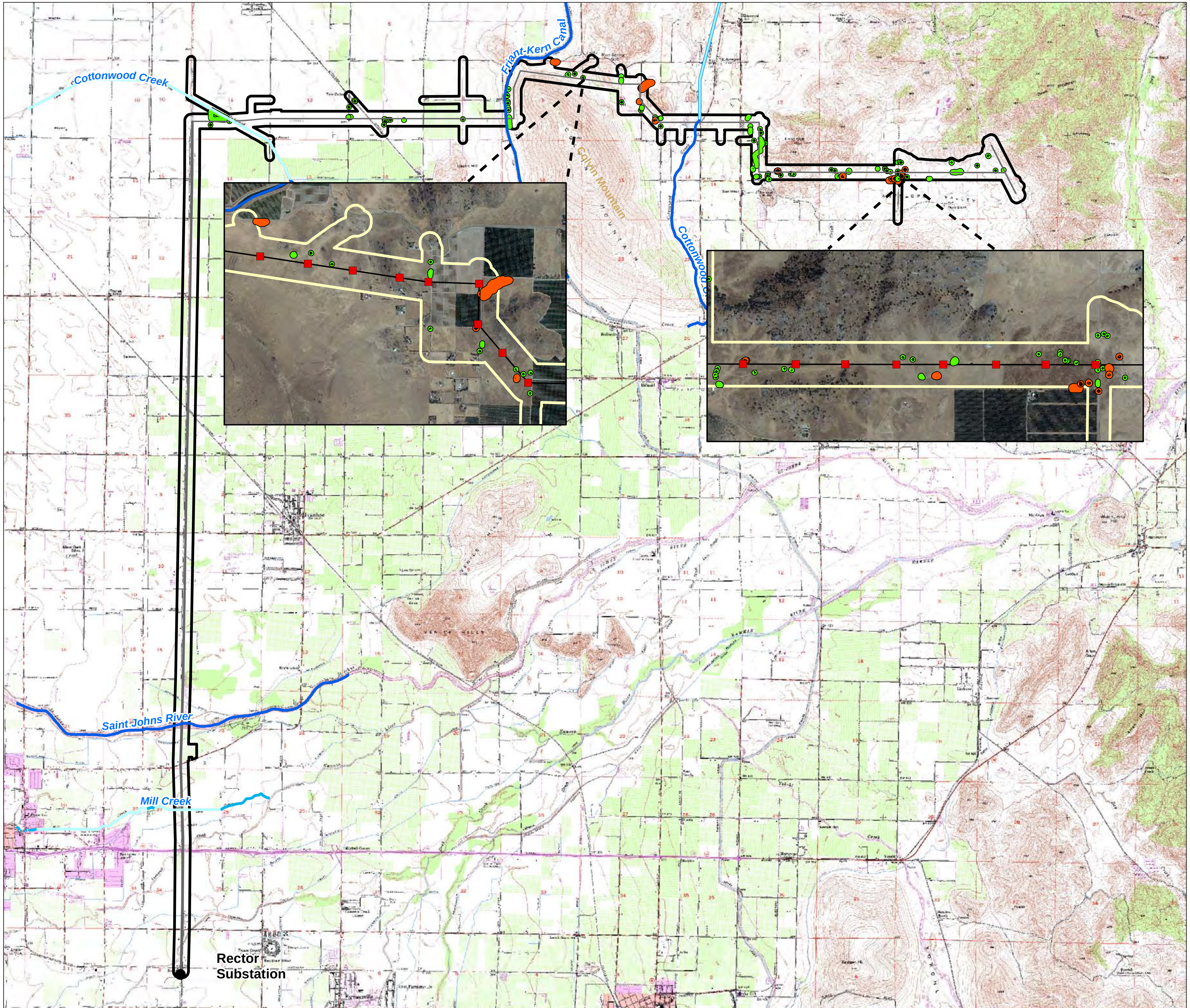

Figure 3-9
Vernal Pool Branchiopod Known Occurrences Within the HCP Planning Area Cross Valley Line

- New Structures
- Cross Valley Line
- HCP Planning Area

Vernal Pool Fairy Shrimp
- Occupied Aquatic Habitat
- Presumed Occupied Aquatic Habitat

NHD Stream Code
- Artificial Path
- Canal/Ditch
- Connector
- Stream/River: Intermittent
- Stream/River: Perennial

Notes: Vernal Pool Fairy Shrimp results are based on surveys conducted during 2010 - 2011 and 2011 - 2012. Due to the scale of the map, the distribution symbology is a graphic representation of actual occurrence area.

N W E S

0 0.5 1 2 Miles

Source: ESRI 2010; SCE 2/26/2013; NAIP 2010; Quad Knopf 1/23/2013

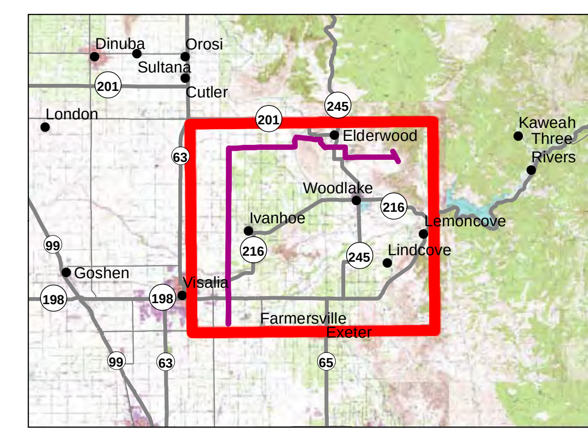

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Table 3-3
Description of Sampled Pools with Listed Branchiopods

Pool ID Number	Size (meters²)	Depth (centimeters)	Disturbance Levels	Branchiopod Species	Cysts
RFS 1	919	16	Undisturbed	VPFS	–
RFS 2	291	18	Undisturbed	VPFS	–
RFS 3	46	15	Undisturbed	VPFS	–
RFS 5	5	18	Undisturbed	VPFS	–
RFS 6	4	18	Undisturbed	VPFS	–
RFS 10	291	18	Undisturbed	VPFS	–
RFS 12	418	25	Undisturbed	VPFS	–
RFS 13	64	15	Undisturbed	VPFS	–
RFS 14	39	15	Undisturbed	VPFS	–
RFS 15	9217	46	Undisturbed	VPFS	–
RFS 16	121	15	Undisturbed	VPFS	–
RFS 18	291	18	Undisturbed	VPFS	–
SFS 1	798	31	Undisturbed	VPFS	–
SFS 57	13	18	Roadside puddle	VPFS	–
SFS 58	13	5	Roadside puddle	VPFS	–
SFS 81	13	18	Roadside puddle	VPFS	–

Key: VPFS = vernal pool fairy shrimp; – = No cysts detected.

Source: Quad Knopf, 2011a

outlines vernal pools, basins, and puddles sampled during protocol surveys that contained listed branchiopods in the HCP Planning Area.

There are 19.5 acres of suitable habitat (Table 3-5, presented at the end of this chapter) and 1.9 acres of occupied habitat for vernal pool fairy shrimp in the HCP Planning Area.

3.2.1.2 VERNAL POOL TADPOLE SHRIMP (*LEPIDURUS PACKARDI*)

Status

The vernal pool tadpole shrimp is Federally listed as endangered. Six subunits (A–F) of vernal pool tadpole shrimp Critical Habitat Unit VERTS 18E are located approximately 1 mile west of the HCP Planning Area (Figure 3-7).

Species Description

The vernal pool tadpole shrimp is a freshwater crustacean that inhabits vernal pools. Its body is characterized as a smooth concave shell or carapace that protects the head and thorax. Its segmented thorax is visible at the end of the shell. At maturity, the species has 30–35 pairs of appendages that propel the animal through the water.

Habitat and Natural History

Vernal pool tadpole shrimps occupy habitat similar to that of the fairy shrimp, occurring primarily in vernal pool and associated swale habitats. Suitable habitats include alkaline pools, vernal pools, vernal swales, vernal lakes, and other seasonal wetlands in California (Helm, 1998). Typically, the vernal pool tadpole shrimp is found in habitats that are deeper than 12 centimeters (cm) (5 inches) and that pond for a minimum of 15–30 days (Rogers, 2001). Pools inhabited by the species do not experience wide daily fluctuations in temperature. Pools can range from clear to turbid waters, with average water temperatures ranging between 50 and 84°F and pH levels ranging between 6.2 and 8.4 (King, 1996).

Like vernal pool fairy shrimps, vernal pool tadpole shrimps have a breeding strategy adapted to ephemeral aquatic features. Females deposit cysts on the pool bottom. Cysts remain in a state of diapause, capable of withstanding desiccation, extreme temperatures, and extended periods (up to 100 years), until conditions are suitable for hatching (Eng et al., 1990). The number of cysts produced in a given vernal pool during a single wet season depends in large part on the pool's specific hydrological regime. An extended inundation period can result in the hatching of multiple generations (Eriksen and Belk, 1999).

Distribution

The vernal pool tadpole shrimp has a patchy distribution across the Central Valley of California, from Shasta County southward to northwestern Tulare County, with isolated occurrences in Alameda and Contra Costa counties (USFWS, 2005 and 2007b). Although vernal pool tadpole shrimps have a relatively wide distribution, the occurrence of the species is sporadic, and they are uncommon when found. The California Natural Diversity Database (CNDDB) reported 226 occurrences throughout the San Joaquin Valley in 2007 (USFWS, 2007b).

Although the vernal pool tadpole shrimp often co-occurs with the vernal pool fairy shrimp (USFWS, 2007a), it is less frequently found during protocol surveys (USFWS, 2007a).

SCE queried CNDDB for all records of Federally listed branchiopod occurrences near the HCP Planning Area. Three occurrences of vernal pool tadpole shrimp have been documented in the vicinity of the Planning Area (CNDDB, 2013). The nearest vernal pool tadpole shrimp record (EOID 47873) is approximately 1.3 miles west of the HCP Planning Area (Figure 3-8). This record, from February 2002, reports that two adults were observed 4.5 miles northwest of Ivanhoe in a turbid clay-bottom vernal pool approximately 0.9 mile southeast of the intersection of Elkhorn Avenue and Banks Ditch (CNDDB, 2013). CNDDB records cited in the most recent USFWS Five-Year Status Review (USFWS, 2007a) for the species reports that 28 occurrences of the species have been found in the Southern Sierra Vernal Pool Region, including the Stone Corral Ecological Reserve, which is located approximately 1.5 miles northwest of the HCP Planning Area.

Potential suitable habitat for the species in the HCP Planning Area consists of larger and deeper vernal pools found in the annual grassland cover type in the HCP Planning Area east of the Friant-Kern Canal.

Results of Habitat Conservation Plan Planning Area Surveys

Quad Knopf (2011a) conducted wet-season sampling for vernal pool branchiopods in 47 vernal pools/swales, 16 basins/stock ponds, and 95 puddles in the HCP Planning Area in 2010–2011 and during a portion of the second-year wet season in 2011–2012. No vernal pool tadpole shrimps were found during those surveys.

Because of low rainfall, the 2011–2012 season protocol sampling was not completed for all the water features that could support this species. Dry-season sampling was conducted in summer 2012 in all pools. No tadpole shrimps were found during wet or dry sampling. However, stock ponds 28 and 34 could not be sampled because they are located on private property and access was not provided. Occupancy is assumed in both features. Table 3-3 presents a summary of pools that contain listed branchiopods.

There are 18.60 acres of suitable habitat (Table 3-5, presented at the end of this chapter) and no occupied habitat for vernal pool tadpole shrimp in the HCP Planning Area.

3.2.1.3 VALLEY ELDERBERRY LONGHORN BEETLE (*DESMOCERUS CALIFORNICUS DIMORPHUS*)

Status

The valley elderberry longhorn beetle (VELB) is Federally listed as threatened. The nearest critical habitat is located approximately 185 miles northwest of the HCP Planning Area.

Species Description

The VELB ranges in length from about 1.25 to 2.5 cm (0.5 to 0.60 inch). Adult males have red-orange wing covers with four elongate spots. Adult females have dark-colored wing covers.

Habitat and Natural History

The, VELB depends completely on the elderberry bush (*Sambucus* sp.) to complete its life cycle. It spends most of its life in the larval stage, living in elderberry stems 1 inch in diameter or greater (USFWS, 1999). Typically, the only evidence of VELB presence is the exit hole made in the stem when the beetle emerges just before its pupal stage. Adult beetles are present and active only for a limited time in the spring (April through May).

Distribution

At the time of its listing, VELB was known from only 10 locations along the American River, Putah Creek, and the Merced River. The most recent Five-Year Review noted that recent surveys did not find the beetle along the Merced River (USFWS, 2006a). However, an additional 190 records since the time of the listing have documented populations from Shasta County to Fresno County (USFWS, 2006a). The species may also occur in Tulare and Kern counties, although no individuals were found in these areas (USFWS, 2006a). Elderberry shrubs are present throughout the HCP Planning Area, and there is a VELB record within 6 miles of the HCP Planning Area (Figure 3-10).

Results of Habitat Conservation Plan Planning Area Surveys

Quad Knopf (2011b) conducted surveys for VELB in accordance with the 1999 USFWS protocol survey requirements. A total of 79 elderberry shrubs or clumps of shrubs with stems greater than or equal to 1 inch in diameter were identified in the Planning Area (Figure 3-11). No suitable exit holes were found in the elderberry shrubs located in the HCP Planning Area.

Elderberry shrubs were found primarily in two HCP land cover types within the HCP Planning Area: riparian and rocky outcrops occurring in annual grassland. Elderberry shrubs are present in the riparian land cover type along the St. John’s River and Cottonwood Creek. The riparian land cover type along the St. John’s River contains 41 shrubs, whereas the riparian land cover type along Cottonwood Creek contains 14 shrubs. The north-south portion of the HCP Planning Area contains 28 scattered elderberry shrubs.

Elderberry shrubs also occur in the annual grassland cover type along dry ridges and rock outcrops located in the HCP Planning Area, east of the Friant-Kern Canal. Sixteen elderberry shrubs were found along rocky outcrops in the annual grassland cover type in the HCP Planning Area east of the Friant-Kern Canal, including one found outside the 1,000-foot-wide survey area but close to an access road in the easternmost section of the corridor. Other plants at these rock outcrops included interior live oak, California buckthorn (*Frangula californica*), coffeeberry (*Frangula californica* ssp. *californica*), and a wide variety of native and nonnative grasses and forbs (Quad Knopf, 2011b).

Of the 77 elderberry shrubs identified in the HCP Planning Area (Figure 3-11), stem counts were made and canopy sizes were measured on 74 shrubs. The number of stems 1–3 inches in diameter averaged four per shrub, stems 3–5 inches in diameter averaged 1.6 per shrub, and stems greater than 5 inches averaged one per shrub (SD = 1.6). The crown size of these elderberry shrubs averaged 389 square feet and ranged from 12.7 square feet to more than 2,341 square feet (Quad Knopf, 2011b).

3.2.1.4 CALIFORNIA TIGER SALAMANDER (*AMBYSTOMA CALIFORNIENSE*)

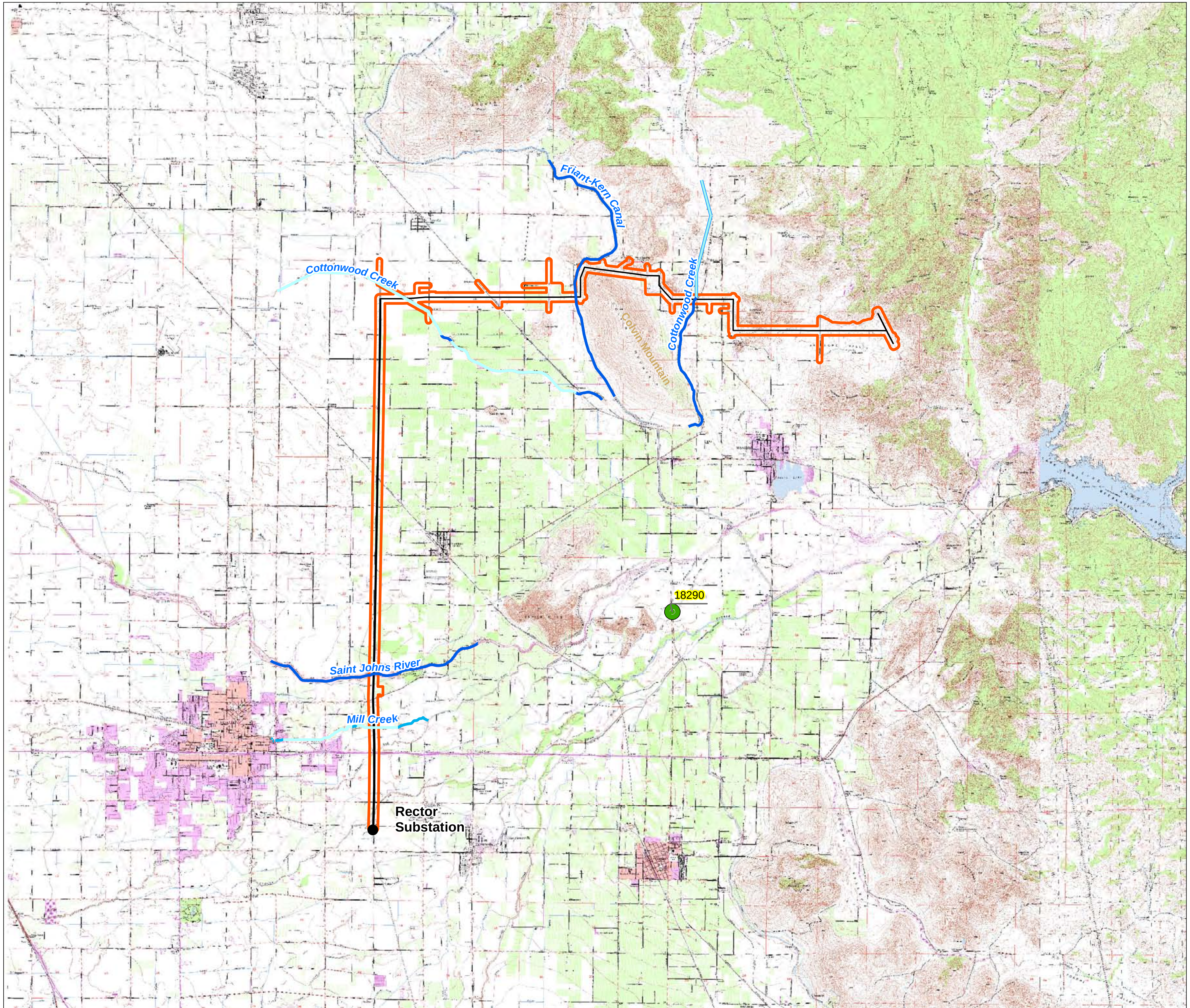
Status

The California tiger salamander is Federally listed as threatened and State listed as endangered. Critical habitat for the California tiger salamander does not occur in the HCP Planning Area (USFWS, 2011a); however, critical habitat for the species has been designated at two locations in Tulare County (Figure 3-12). Unit 5 of the Cottonwood Creek Unit is located approximately 6 miles west of the HCP Planning Area and consists of approximately 4,342 acres. Unit 3b of the Hills Valley Unit is located along the Fresno–Tulare County line approximately 12.5 miles north of the HCP Planning Area.

Species Description

The California tiger salamander is a fossorial (burrow-dwelling) species from the family Ambystomatidae (mole salamanders). Mole salamanders spend most of their lives underground to prevent desiccation during dry weather or seasons. Adult California tiger salamander are large (3 to 6.5 inches long, excluding the tail), stocky salamanders with big heads, small eyes, and brown to blackish skin with large yellow to white spots. Larvae are fully aquatic, with external gills and a fin along the length of their back. At metamorphosis, the gills and fin disappear and the lungs become fully developed (AmphibiaWeb, 2013).

Figure 3-10
Valley Elderberry Longhorn Beetle CNDDB Records near the HCP Planning Area Cross Valley Line



Cross Valley Line
HCP Planning Area
Valley Elderberry Longhorn Beetle
NHD Stream Code
Artificial Path
Canal/Ditch
Connector
Stream/River: Intermittent
Stream/River: Perennial

Note:

CNDDB - California Natural Diversity Database (3/12/2013)

N W E S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; DFG 3/05/2013

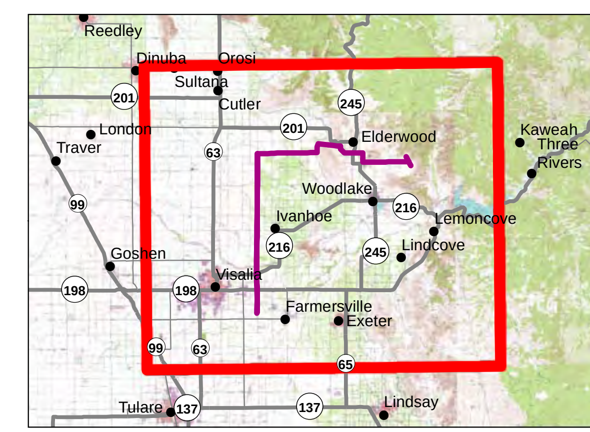


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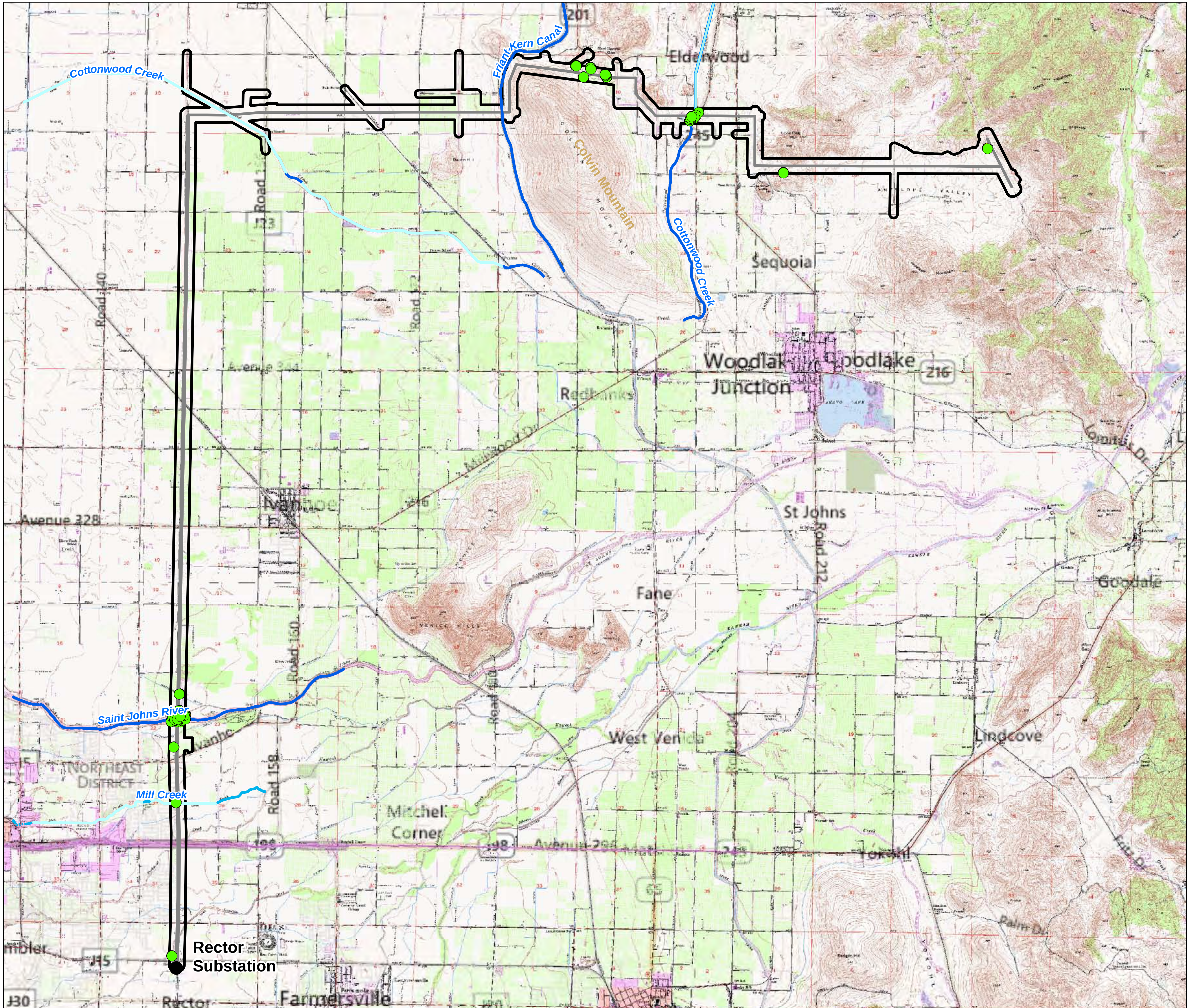
Figure 3-11
Known Distribution of Elderberry Shrubs in the HCP Planning Area
Cross Valley Line



Cross Valley Line
HCP Planning Area
Elderberry Shrub
NHD Stream Code
Artificial Path
Canal/Ditch
Connector
Stream/River: Intermittent
Stream/River: Perennial

Notes: Elderberry results are based on surveys conducted during 2010 - 2013. Due to the scale of the map, the distribution symbology is a graphic representation of actual occurrence area.

N
W E
S

0 0.5 1 2 Miles

Source: ESRI 2010; SCE 2/26/2013; Quad Knopf 5/17/2012

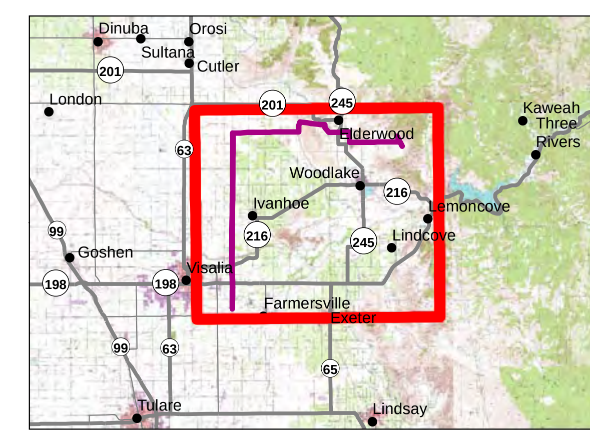


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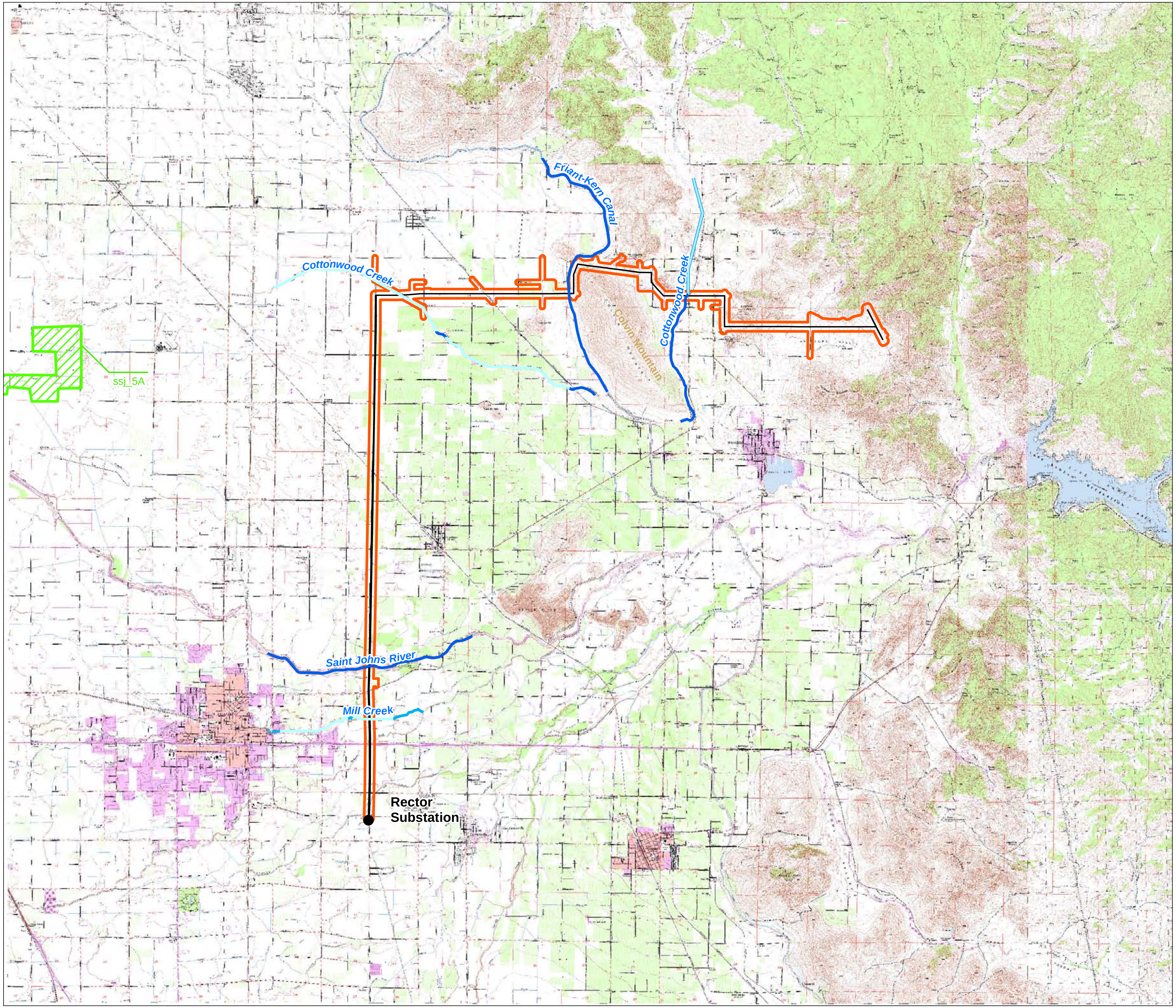
Figure 3-12
California Tiger Salamander Critical Habitat in the HCP Planning Area Cross Valley Line

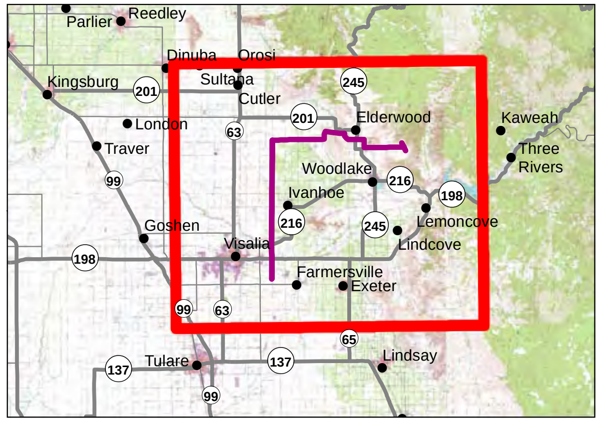


Cross Valley Line
HCP Planning Area
California Tiger Salamander Critical Habitat
NHD Stream Code
Artificial Path
Canal/Ditch
Connector
Stream/River: Intermittent
Stream/River: Perennial
ssj_5A California Tiger Salamander Critical Habitat Mapunit

N
W E
S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; USFWS 3/12/2013



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Habitat and Natural History

The California tiger salamander is restricted to open grasslands where seasonally inundated depressions are available for breeding (USFWS, 2005). Annual grassland scattered with seasonally inundated features, such as vernal pools and stock ponds, contains the highest density of breeding populations of California tiger salamander (AmphibiaWeb, 2013). This species requires natural ephemeral pools or ponds that mimic the hydrology of vernal pools or seasonal ponds (e.g., stock ponds that fill with water each rainy season but become dry during summer). Breeding pools typically have a moderate to high level of turbidity that presumably reduces predation (Bobzien and DiDonato, 2007). California tiger salamanders breed from December through February (CaliforniaHerps.com, 2013). Reproduction is driven by precipitation patterns, varying from single mass events to multiple events lasting several months. Adults engage in mass migration during a few rainy nights during the rainy season from November to May and leave the breeding ponds shortly after breeding (CaliforniaHerps.com, 2013). During years without sufficient rainfall, migrations and breeding do not occur. Most adults return to their natal ponds during their first year of breeding, but a study showed that about 30 percent bred in different ponds (CaliforniaHerps.com, 2013). During a 3-year mark/recapture study at breeding ponds in Monterey County, Trenham (2001) found that approximately 80 percent of individuals returned to the same breeding ponds in subsequent years and that 20 percent dispersed to different ponds. Trenham (2001) found that California tiger salamanders travelled 2,200 feet (670 meters/0.67 kilometer [km]) between ponds. Dispersers have been found to be both first-time breeders (last captured as newly metamorphosed juveniles) and experienced breeders (last captured as breeding adults) (Trenham et al., 2001).

California tiger salamanders have the second longest migration distance for ambystomid salamanders (Searcy et al., in press). Orloff (2007) found that most California tiger salamander traveled at least 0.5 mile (0.8 km) from the breeding sites. Searcy and Schaffer (2011) estimated that salamanders were capable of migrating up to 1.5 miles (2.4 km) each breeding season but determined that 95 percent of the population was found within 1.16 miles (1.87 km) of breeding ponds. Most salamanders seem to disperse in a straight line and are not influenced by terrain (Orloff, 2007). However, urban development and dense vegetative cover do inhibit migration patterns. Trenham and Cook (2008) found that the salamanders were more likely to disperse through grasslands while avoiding urbanized areas.

Like most amphibian larvae, California tiger salamander larvae must grow to a critical minimum size before they can metamorphose (USFWS, 2009b). The longer the inundation period of the pool, the larger the larvae are able to grow before metamorphosis. Larger size at metamorphosis has been found to correlate with higher survival and reproduction rates (USFWS, 2009b). Metamorphosis of salamanders occurs from mid-June to July after a 4- to 5-month larval stage. Juveniles disperse at night to suitable upland habitat. After juveniles disperse to upland refugia, they do not typically return to breed for 4–5 years (USFWS, 2009b).

During summer, California tiger salamanders use small-mammal burrows and soil crevices for aestivation (period of dormancy) sites. Ground squirrels (*Otospermophilus beecheyi*) and Botta’s pocket gophers (*Thomomys bottae*) provide most of the aestivation sites (USFWS, 2009b). California tiger salamanders require persistent small-mammal activity to create, maintain, and sustain sufficient underground refugia (USFWS, 2009b). Burrows are short lived without continuous small-mammal activity, typically collapsing within around 18 months.

Based on rangewide genetic variation of California tiger salamanders, Shaffer and Trenham (2002) divided the California tiger salamanders into six populations: (1) Sonoma County, (2) Santa Barbara County, (3) the Bay

Area, (4) Central Valley, (5) the southern San Joaquin Valley, and (6) the Central Coastal Range. California tiger salamanders in the HCP Planning Area are part of the southern San Joaquin Valley population, which includes portions of Madera, Fresno, Tulare, and Kings counties.

Distribution

Six occurrences of the California tiger salamander are located within 5 miles of the HCP Planning Area (CNDDB, 2013). The nearest occurrence record (EOID 408) is approximately 1.6 miles (2.6 km) north of the HCP Planning Area (Figures 3-13a and 3-13b).

Numerous larvae were observed in April 1995 (EOID 60518) in vernal pools on the Stone Corral Ecological Reserve, located north of Avenue 384 and approximately 0.6 mile west of Road 153, which is located approximately 4 miles (6.4 km) northwest of the HCP Planning Area boundary. One adult California tiger salamander was also observed near this location in February 2005 (CNDDB, 2013). Four occurrences of this species (EOID 7033, EOID 7030, EOID 1334, and EOID 22622) are located approximately 3.5 miles (5.5 km) west of the HCP Planning Area (Figures 3-13a and 3-13b). All extant records are for vernal pools located in annual grassland habitat (CNDDB, 2013).

Approximately 18.60 acres of suitable aquatic habitat and 1,048 acres of annual grassland provide upland foraging and aestivation habitat for California tiger salamander in the HCP Planning Area (Table 3-5, presented at the end of this chapter). In addition, approximately 1,812 acres of agricultural lands provide movement and dispersal habitat for this species in the HCP Planning Area (Table 3-5).

Results of Habitat Conservation Plan Planning Area Surveys

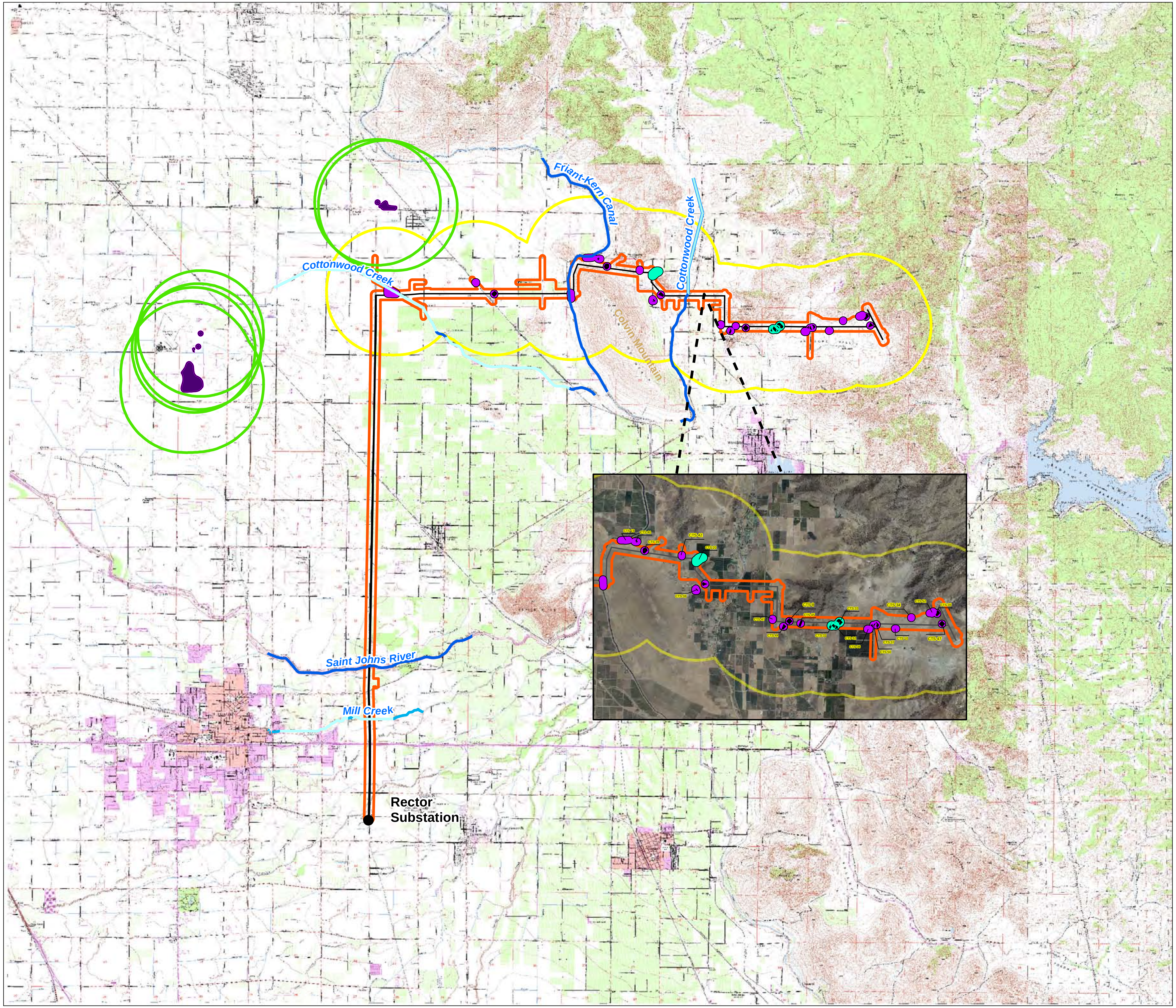
California tiger salamander larvae were identified in eight of the 47 vernal pools and 16 stock ponds during the 2011 larval survey (Quad Knopf, 2011c). Four of the occupied sampled pools (CTS 20, CTS 31, CTS 32, and CTS 33) are in the HCP Planning Area (Figures 3-13a and 3-13b). These locations respectively correspond to vernal pool wetland features ep18, ep09, ep11, and ep40, which were identified in a previous HCP map (Appendix B, Figure B-3) (Quad Knopf, 2010b). The remaining four occupied aquatic features (CTS 24, CTS 17, CTS 15, and CTS 6) (Figures 3-13a and 3-13b) are outside of the HCP Planning Area but are within 1.25 miles (2 km) of an occupied breeding pool. Using the new information about California tiger salamander breeding and dispersal patterns, the HCP assumes that suitable aquatic features located within 1.25 miles (2 km) of an occupied aquatic feature are also occupied breeding habitat.

The HCP also assumes that all upland natural land cover types within 1.25 miles (2 km) of occupied aquatic features are suitable California tiger salamander upland habitat.

These eight occupied aquatic features collectively included four vernal pools (CTS 20, CTS 31, CTS 32, and CTS 33), three stock ponds (CTS 6, CTS 15, and CTS 17), and one shallow artificial basin constructed to capture local stormwater runoff (CTS 24) (Figures 3-13a and 3-13b) (Appendix B, Figure B-3).

These eight aquatic features are in the east-west portion of the HCP Planning Area, and all are adjacent to or surrounded by large tracts of grazed annual grassland land cover (Figure 3-5). Only three of the occupied aquatic features are within 150 feet of agricultural land cover types (CTS 20) or developed land cover types (rural residential development) (CTS 6 and CTS 24).

Figure 3-13a
California Tiger Salamander Known Occurrences and Habitat Near the HCP Planning Area Cross Valley Line



Cross Valley Line

HCP Planning Area

California Tiger Salamander

Occupied Aquatic Habitat

Presumed Occupied Aquatic Habitat

Terrestrial Habitat

2km Upland Buffer

CNDDB CTS Records

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

Notes: California Tiger Salamander results are based on surveys conducted during 2010 - 2011. Due to the scale of the map, the distribution symbology is a graphic representation of actual occurrence area.

N W E S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; Quad Knopf 11/15/2011

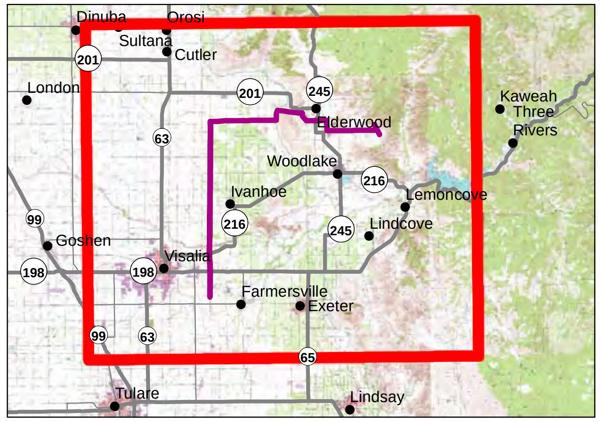


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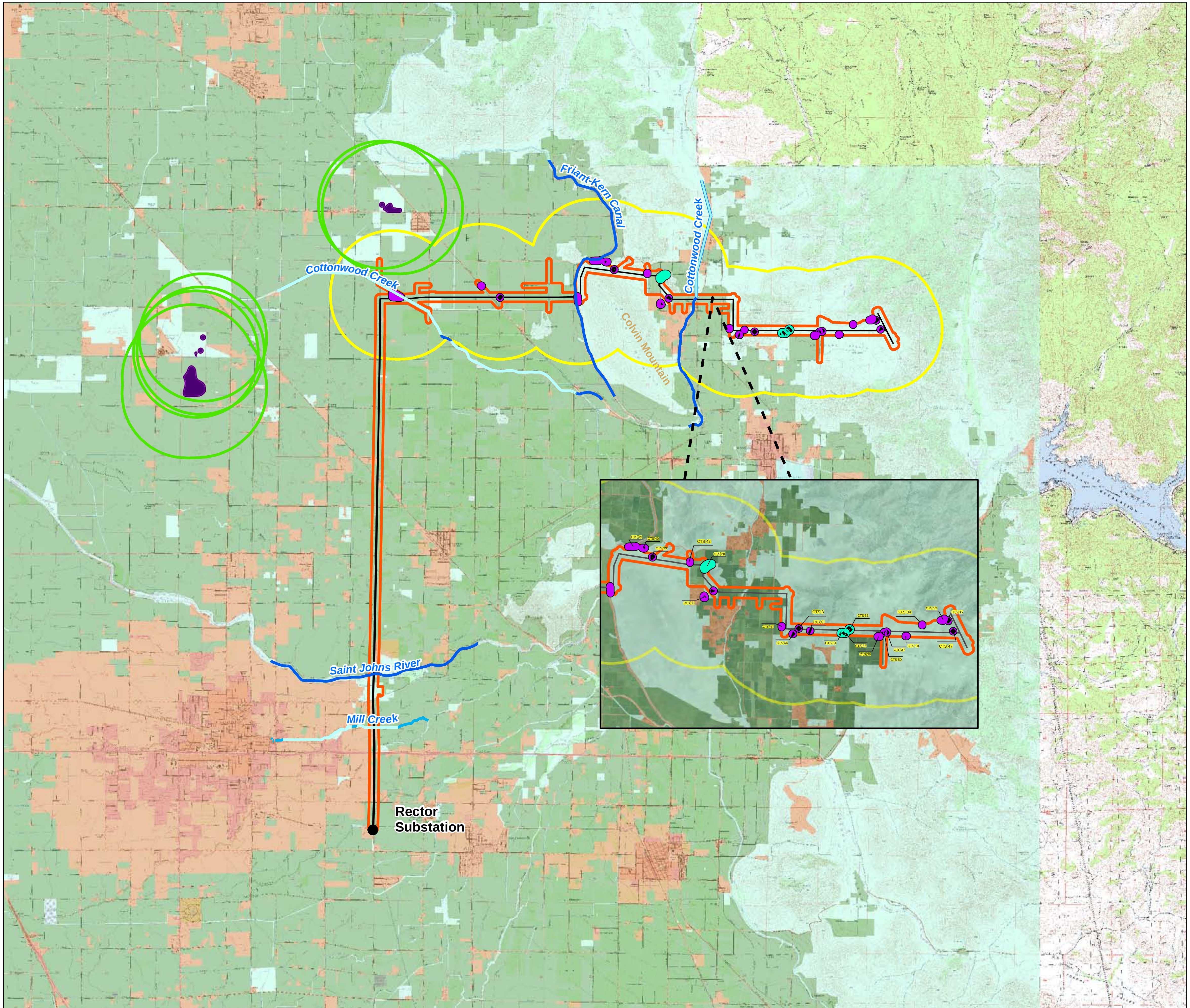
Figure 3-13b
California Tiger Salamander Known Occurrences and Habitat Near the HCP Planning Area Cross Valley Line



Cross Valley Line

HCP Planning Area

California Tiger Salamander

Occupied Aquatic Habitat

Presumed Occupied Aquatic Habitat

Terrestrial Habitat

2km Upland Buffer

CNDDB CTS Records

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

Landcover

Agriculture

Natural

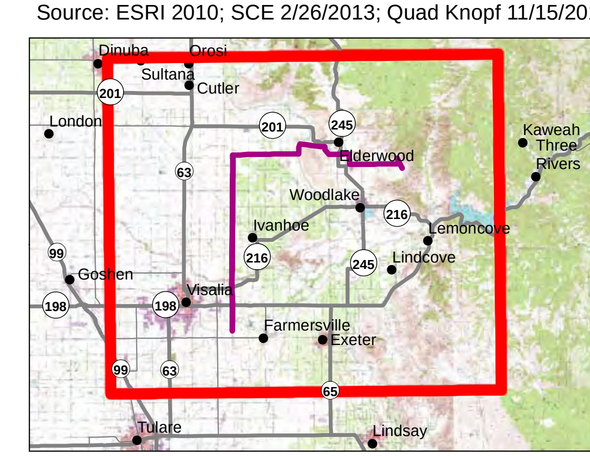
Developed

Notes: California Tiger Salamander results are based on surveys conducted during 2010 - 2011. Due to the scale of the map, the distribution symbology is a graphic representation of actual occurrence area.

N W E S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; Quad Knopf 11/15/2011



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Aquatic features in the HCP Planning Area west of the Friant-Kern Canal that were identified as suitable for California tiger salamander were sampled in 2010, and no California tiger salamanders were found. Furthermore, most of the upland areas in the HCP Planning Area west of the Friant-Kern Canal are irrigated agriculture (Figure 3-5).

Figures 3-13a and 3-13b illustrate the locations of occupied and presumed occupied pools, as well as suitable breeding pools and ponds within 1.25 miles (2 km) of breeding pools that were not occupied during the survey but that could support breeding.

The habitat area in Figure 3-12 depicts upland habitat suitable for the California tiger salamander within the HCP Planning Area. This HCP defines upland habitat suitable for the California tiger salamander (for aestivation) as annual grassland within 1.25 miles (2 km) of occupied or presumed occupied breeding pools or ponds (Jennings and Hayes, 1994). Annual grassland and agricultural land cover types within 1.25 miles (2 km) of occupied or presumed occupied breeding habitat provide upland habitat for movement. Figures 3-13a and 3-13b show the area within 1.25 miles from the outer margin of an occupied or presumed occupied breeding pond/feature. This area of suitable upland habitat includes annual grassland land cover types regardless of slope, as well as agricultural land cover types (through which salamanders may move).

3.2.1.5 WESTERN SPADEFOOT TOAD (*SPEA HAMMONDII*)

Status

The western spadefoot toad is a California species of special concern. Although previously listed as a candidate species, it is currently not a Federally listed species; therefore, no critical habitat has been designated.

Species Description

Adults range in length from 3.8 to 6.4 cm (1.5 to 2.5 inches) (Stebbins, 2003). The western spadefoot toad’s coloration ranges from a dusky green to gray, with four irregular light-colored stripes on the back and a central pair of stripes distinguished by a dark hourglass shape. Skin tubercles (small, rounded protuberances) are sometimes tipped with orange or are reddish in color, particularly among young individuals. Spadefoot toads have pale gold irises with vertical slit pupils, and their abdomens are whitish without markings. Larvae are up to 7 cm (2.8 inches) long (Stebbins, 2003), with a rounded body, usually whitish gray to very light gray-green in color, with eyes on the dorsal (upper) surface of the head (Holland and Goodman, 1998).

Spadefoot toads are distinguished from true toads (genus *Bufo*) by their vertically elliptical pupils, black sharp-edged keratinized “spade” on each hind foot, teeth in their upper jaws, the reduction or absence of parotoid glands, and comparatively smooth skin.

Habitat and Natural History

Western spadefoot toads are a terrestrial species that enter water only to breed (Dimmit and Ruibal, 1980). Breeding depends on temperature and rainfall patterns (Jennings and Hayes, 1994) but generally occurs between January and May (Stebbins, 2003). They use vernal pools or other temporary pools for breeding (Jennings and Hayes, 1994). Western spadefoot toads require water temperatures between 48° and 86°F for breeding to occur (Brown, 1967). They are explosive breeders, with the number of individuals in a breeding aggregation potentially exceeding 1,000 (Jennings and Hayes, 1994), although they are typically much smaller. Tadpoles consume plankton and algae, but they are also carnivorous and will feed on dead amphibian larvae, as well as their own species. Tadpole can transform into a predacious and cannibalistic form with a beak on the upper jaw, a corresponding notch below, and enlarged jaw musculature (Orton, 1954; Bragg, 1964; Stebbins, 1985). Carnivorous spadefoot tadpoles tend to feed preferentially on fairy shrimp (Bragg, 1962; Farrar and Hey, 1997).

Movement patterns and colonization abilities of the adult western spadefoot toads are not fully understood (Jennings and Hayes, 1994). Western spadefoot toads typically emerge at night during periods of warm rainfall to forage (Stebbins, 1972). They move toward breeding sites in late winter to spring, in response to favorable temperatures and rainfall. The breeding season is brief (Stebbins, 2003), sometimes lasting no more than 1–2 weeks. Following breeding, individuals return to upland habitats, where they spend most of the year aestivating (in a dormant state) in burrows. The western spadefoot toad may breed in the same ponds as California tiger salamanders in areas where the two species are sympatric (CNDDB, 2013). Suitable upland habitat includes washes, floodplains, alluvial fans, and playas (Stebbins, 2003), extending into foothills and mountains to an elevation of 4,462 feet (1,360 meters) (Jennings and Hayes, 1994). During dry periods, individuals typically excavate burrows into the ground at depths up to 3 feet, but they may also occupy burrows constructed by small mammals; aestivation period may continue for 9 months (Jennings and Hayes, 1994).

Distribution

There are six records of the western spadefoot toad occurring in the vicinity of the HCP Planning Area (CNDDB, 2013) (Figure 3-14). The nearest occurrence record (EOID 60762) is approximately 1.1 miles (1.8 km) northwest of the HCP Planning Area; one tadpole was netted on March 25, 2005, on the Stone Corral Ecological Reserve. Numerous larvae were also observed 1.4 miles from the Planning Area, approximately 0.8 mile northeast of this location on April 5, 1995 (EOID 410). Three additional occurrences of this species (EOID 43826, EOID 61147, and EOID 60761) are located between approximately 1.5 and 3.9 miles west of the HCP Planning Area. The remaining (sixth) occurrence is located approximately 3.2 miles southeast of the eastern terminus of the HCP Planning Area.

Results of Habitat Conservation Plan Planning Area Surveys

The western spadefoot toad was found in 18 pools during 2010–2012 surveys in the HCP Planning Area. The distribution of the western spadefoot toad is primarily east of the Friant-Kern Canal (Figure 3-15). The HCP Planning Area contains 7.81 acres of suitable aquatic habitat and 1,048 acres of annual grassland that provides suitable upland habitat (Table 3-5, presented at the end of this chapter).

3.2.1.6 LITTLE WILLOW FLYCATCHER (*E. TRAILLII BREWSTERI*)

Status

The little willow flycatcher is State listed as endangered. Because it is not a Federally listed species, no critical habitat has been designated.

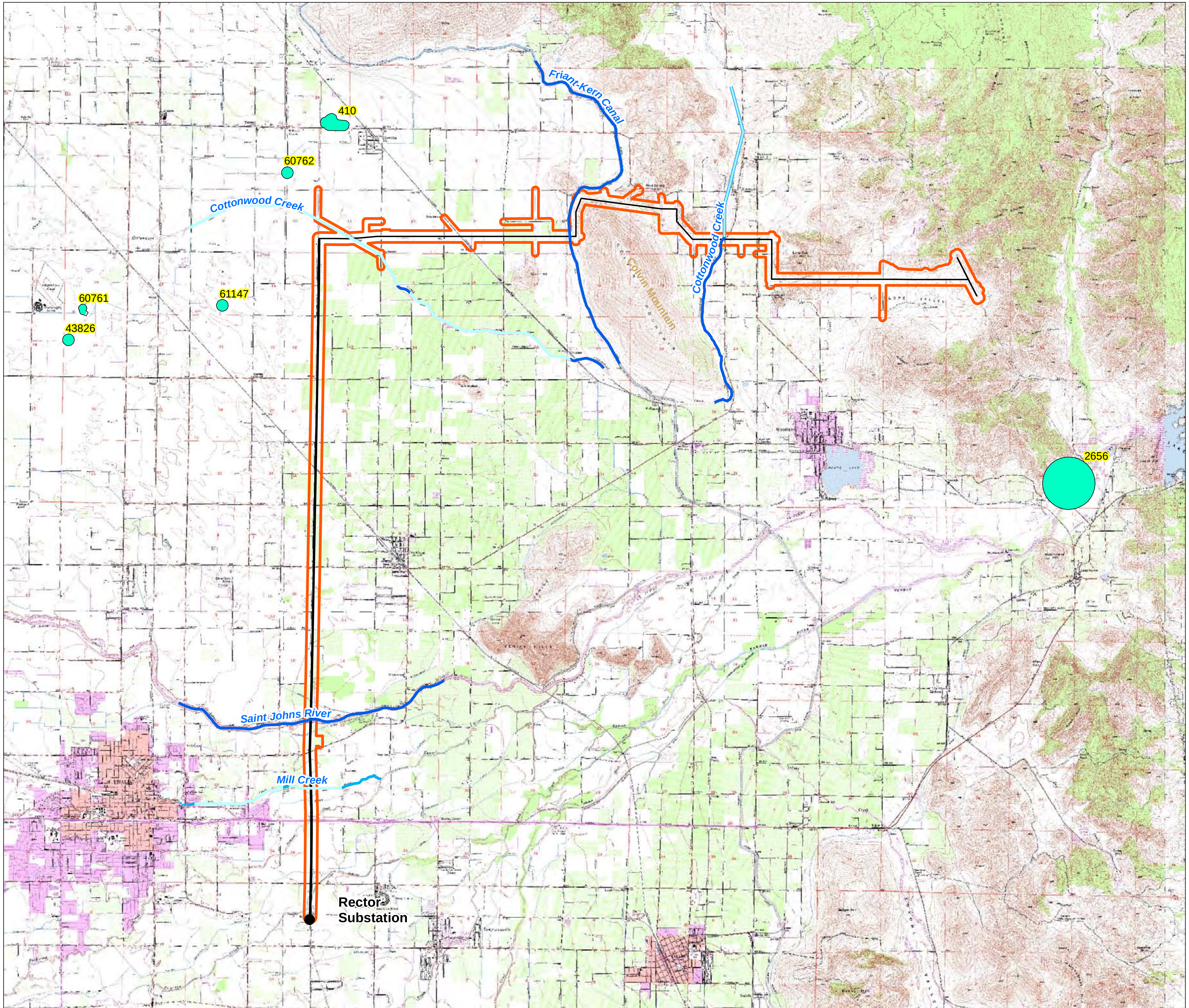


Figure 3-14
Spadefoot Toad CNDDB Records near the HCP Planning Area Cross Valley Line

Cross Valley Line
HCP Planning Area
Spadefoot Toad
NHD Stream Code
Artificial Path
Canal/Ditch
Connector
Stream/River: Intermittent
Stream/River: Perennial

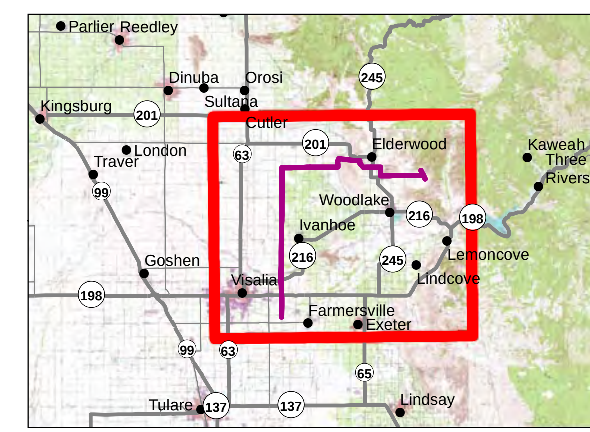
Note:

CNDDB - California Natural Diversity Database (3/12/2013)

N
W E
S

0 0.5 1 2 Miles

Source: ESRI 2010; SCE 2/26/2013; DFG 3/05/2013



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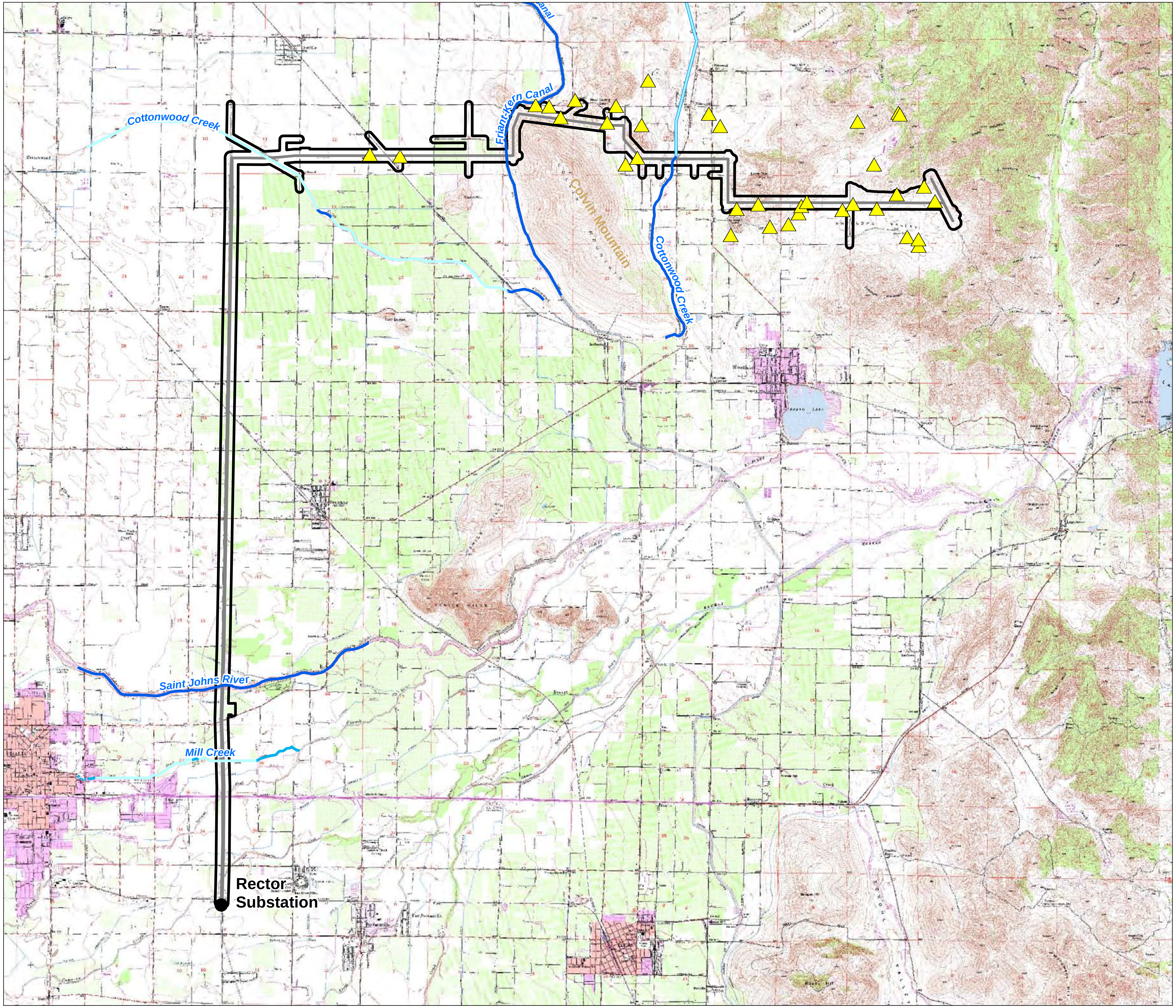


Figure 3-15
Spadefoot Toad Occurrences in the HCP Planning Area Cross Valley Line

Cross Valley Line

HCP Planning Area

Spadefoot Toad Occupied Aquatic Habitat

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

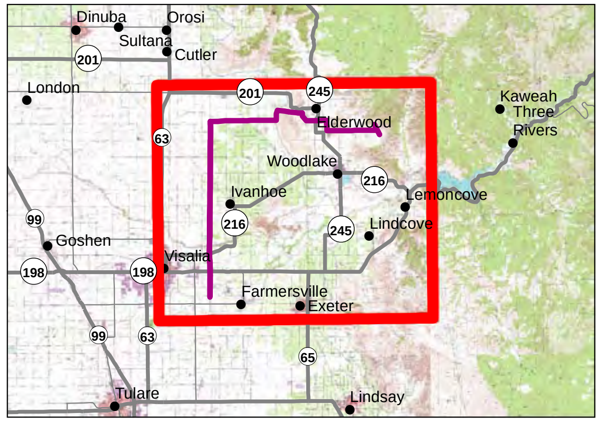
Stream/River: Perennial

Notes: Spadefoot Toad results are based on surveys conducted during 2010 - 2011 and 2011 - 2012. Due to the scale of the map, the distribution symbology is a graphic representation of actual occurrence area.

N
W E
S

0 0.5 1 2
Miles

Source: ESRI 2010; SCE 2/26/2013; Quad Knopf 1/23/2013



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Species Description

The willow flycatcher is a migratory songbird that depends on riparian habitat for breeding and foraging. The four subspecies of the willow flycatcher are differentiated primarily by subtle differences in color and morphology and by distinct breeding ranges. Two subspecies of willow flycatcher, the little willow flycatcher and the southwestern willow flycatcher (*Empidonax traillii extimus*), have breeding ranges west of the Sierra Nevada.

The breeding range of the little willow flycatcher in California is from Tulare County north, along the western side of the Sierra Nevada and Cascade Range, extending to the coast in northern California (RHJV, 2004). The current breeding range of the southwestern willow flycatcher includes the Sierra Nevada/Cascade Range region, from southeast Shasta County, south to northern Kern County. Therefore, the breeding ranges of these two subspecies overlap in the vicinity of the HCP Planning Area.

Habitat and Natural History

In California, willow flycatcher breeding habitat is typically composed of moist meadows with perennial streams, lowland riparian woodlands dominated by willows and cottonwoods, or smaller spring-fed or boggy areas with willows or alders (Grinnell and Miller, 1944; Harris et al., 1988; Whitfield et al., 1997). Willow flycatchers have also been found in other riparian environments of various types and sizes ranging from small willow-surrounded lakes or ponds with a fringe of meadow or grassland to various willow-lined streams, grasslands, or boggy areas (RHJV, 2004). Riparian deciduous shrubs or trees, such as willow or alder, are essential elements of willow flycatcher territories (Harris et al., 1988). In lowland riverine habitats, contiguous willow thickets are most often used. These thickets may provide edges and/or openings in the willow canopy that are necessary for willow flycatcher (Harris, 1991).

Riparian patches used for breeding by the closely related subspecies, the southwestern willow flycatcher, vary in size and shape and may be a relatively dense, linear, contiguous stand or an irregularly shaped mosaic of dense vegetation with open areas. Southwestern willow flycatchers have nested in patches as small as 2 acres; however, they have not been found nesting in narrow linear habitats that are less than 33 feet wide, although they will use such linear habitats during migration (Sogge et al., 1997).

Distribution

The little willow flycatcher breeds from Tulare County northward in riparian zones along the western slopes of the Sierra Nevada (Harris et al., 1988). The only suitable habitats for the species in the HCP Planning Area are riparian habitat at Cottonwood Creek and the St. John’s River crossings (Figures 3-5, 3-16, and 3-17). Approximately 4 miles north of where Cottonwood Creek crosses the HCP Planning Area, there is one record from 1988 presumably of the southwestern willow flycatcher, but it could have been the little willow flycatcher (CNDDB, 2013) (Figure 3-17). The HCP Planning Area has 5.38 acres of suitable habitat for little willow flycatcher: 4.37 acres along the St. John’s River crossing and 1.01 acres along the Cottonwood Creek crossing.

Results of Habitat Conservation Plan Planning Area Surveys

Nonprotocol-level surveys were conducted at the St. John’s River and Cottonwood Creek in the HCP Planning Area in 2011 (Quad Knopf, 2012a). Protocol-level surveys were conducted in 2012 (Quad Knopf, 2012b) at the St. John’s River and Cottonwood Creek.

Surveys at the St. John's River detected either a single flycatcher on two occasions or two flycatchers on a single occasion for 2 days. These sightings of an undetermined subspecies were recorded during both 2011 and 2012. Although habitat exists for the species at Cottonwood Creek, no willow flycatchers were detected during 2011 or 2012. The birds were not identified to a subspecies level (Quad Knopf, 2012b). Both the St. John's River and Cottonwood Creek do not have a well-developed canopy layer or understory and are dry during summer, which provide limited breeding opportunities for both flycatcher subspecies.

3.2.1.7 SOUTHWESTERN WILLOW FLYCATCHER (*EMPIDONAX TRAILLII EXTIMUS*)

Status

The southwestern willow flycatcher is Federally listed as endangered and State listed as endangered. There is no designated critical habitat for southwestern willow flycatcher near the HCP Planning Area. Currently, critical habitat for the species in California includes riparian areas in coastal California, in the Owens Valley, along the Colorado River, and in the Kern River Basin. The nearest critical habitat is located 65 miles away, in Kern County.

Species Description

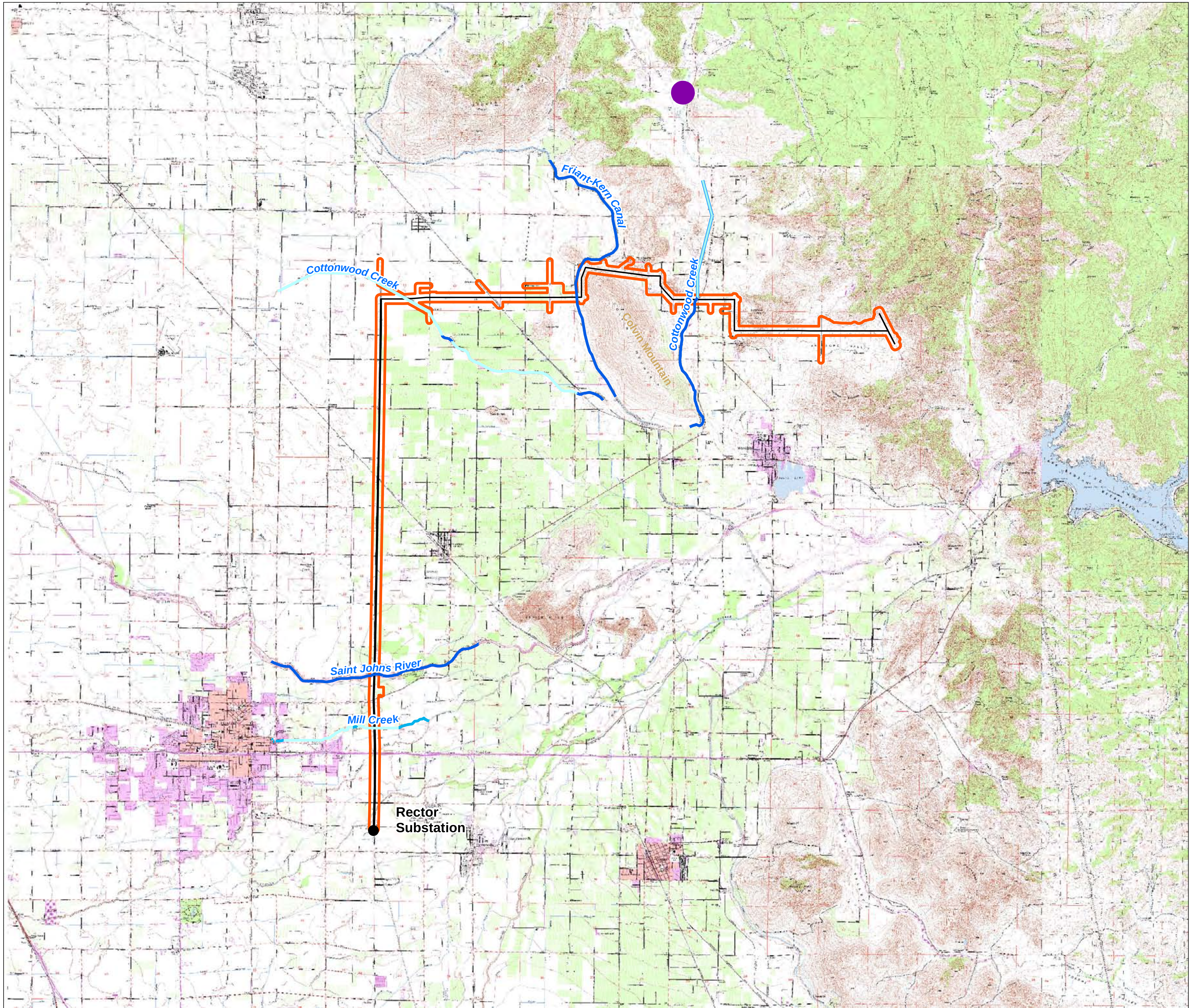
The willow flycatcher is a migratory songbird that depends on riparian habitat for breeding. The four subspecies of the willow flycatcher are differentiated primarily by subtle differences in color and morphology and by their occupation of distinct breeding ranges. Two subspecies of willow flycatcher, the little willow flycatcher and the southwestern willow flycatcher, have breeding ranges west of the Sierra Nevada.

Habitat and Natural History

In California, willow flycatcher breeding habitat is typically composed of moist meadows with perennial streams, lowland riparian woodlands dominated by willows, and cottonwoods or smaller spring-fed or boggy areas with willows or alders (Harris et al., 1988; Whitfield et al., 1997). Riparian deciduous shrubs or trees such as willow or alder are essential elements of willow flycatcher territories (Harris et al., 1988). In lowland riverine habitats, contiguous willow thickets are most often used. These thickets may provide edges and/or openings in the willow canopy that are necessary for southwestern willow flycatcher (Harris, 1991).

Southwestern willow flycatchers are mostly restricted to river corridors and in general prefer dense riparian forest with a well-developed understory with areas of surface water. The dominant vegetation of the breeding habitat can be composed of vegetation with monotypic high-elevation willows (*Salix exigua* or *S. geyeriana*), monotypic exotic vegetation such as tamarisk (*Tamarix* sp.) or Russian olive (*Elaeagnus angustifolia*); native broadleaf-dominated vegetation composed of a single species (often black willow or other willow species) or mixtures of native broadleaf trees and shrubs including cottonwood, willows (*Salix* spp.), box elder (*Acer negundo*), ash (*Fraxinus* spp.), alder (*Acnus* spp.), and buttonbush (*Cephalanthus occidentalis*); and mixed native/exotic vegetation of native broadleaf trees and shrubs (such as those listed above) mixed with exotic introduced species (Sogge et al., 1997). The understory is often composed of sedges, rushes, nettles, and other herbaceous wetland plants (Sogge et al., 1997). Regardless of plant species composition or height, occupied sites always have dense vegetation in the patch interior. These dense patches are often interspersed with small openings, open water, or shorter/sparser vegetation, creating a mosaic that is not uniformly dense (Sogge et al., 1997).

Figure 3-16
Willow Flycatcher CNDDB Records near the HCP Planning Area Cross Valley Line



Cross Valley Line

HCP Planning Area

Willow Flycatcher

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

Note:

CNDDB - California Natural Diversity Database (3/12/2013)
(subspecies not determined during riperian bird survey)

N W E S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; DFG 3/05/2013

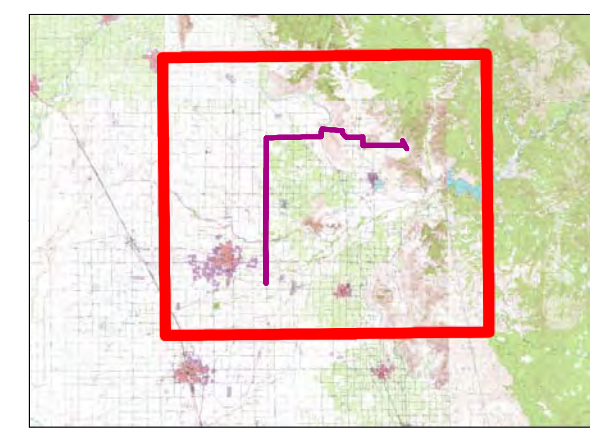


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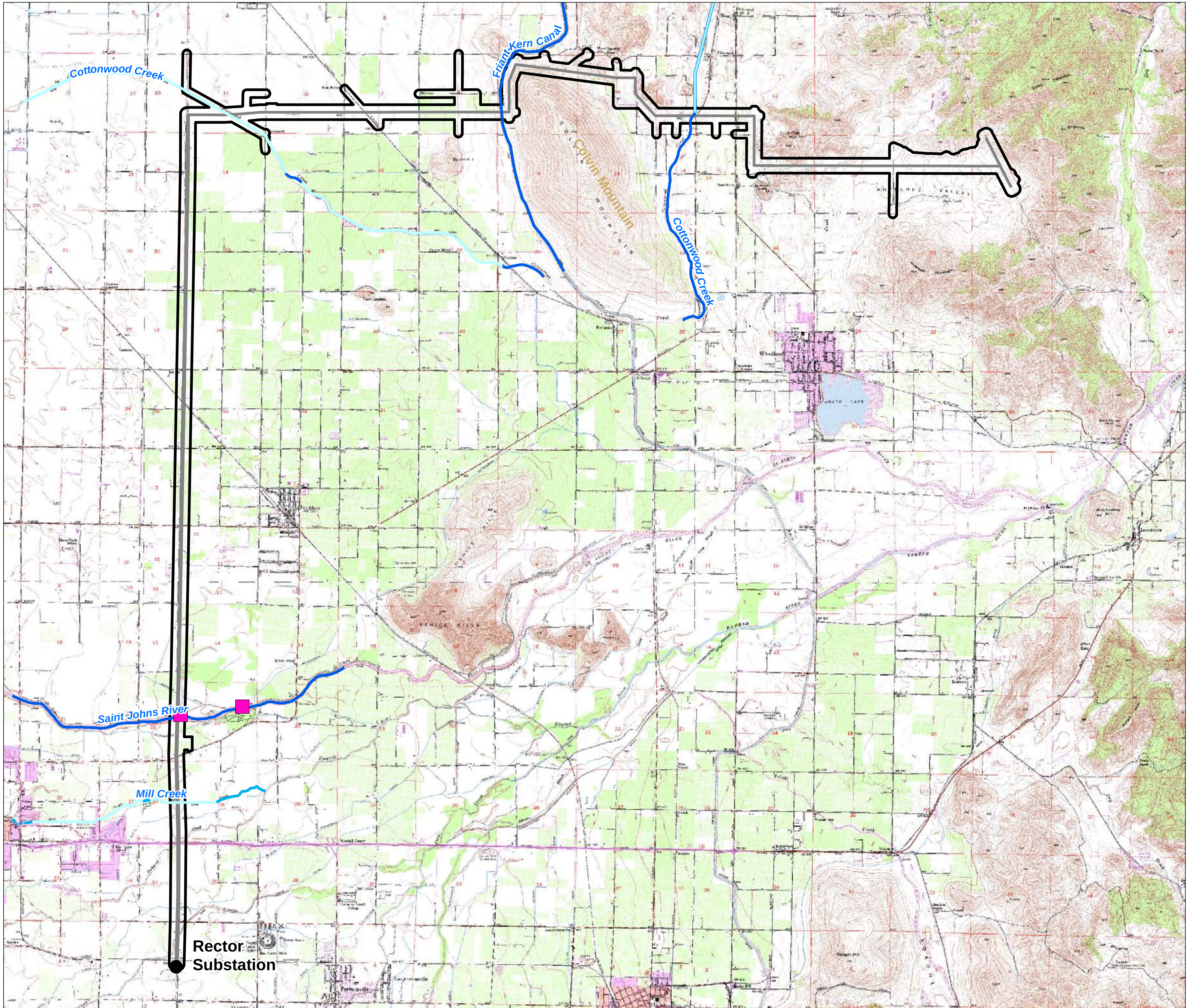
Figure 3-17
Willow Flycatcher Known Occurrences Within and near the HCP Planning Area
Cross Valley Line



Cross Valley Line

HCP Planning Area

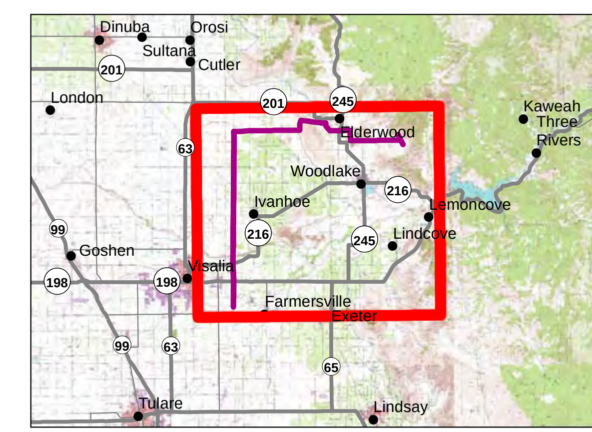
Willow Flycatcher Known Occurrences

Note:
Based on surveys conducted during October 2011

N W E S

0 0.5 1 2 Miles

Source: ESRI 2010; SCE 2/26/2013;Quad Knopf Oct 2011



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Riparian patches used by breeding flycatchers vary in size and shape and may be a relatively dense, linear, contiguous stand or an irregularly shaped mosaic of dense vegetation with open areas. Southwestern willow flycatchers have nested in patches as small as 2 acres; however, they have not been found nesting in narrow linear habitats that are less than 33 feet wide, although they will use such linear habitats during migration (Sogge et al., 1997).

Distribution

The southwestern willow flycatcher spends the winter in locations such as southern Mexico, Central America, and probably South America. The bird migrates and breeds in the United States from April through September. The historic breeding range includes southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, and southwestern Colorado (Sogge et al., 1997).

The breeding range of the southwestern willow flycatcher in California is primarily restricted to the Sierra Nevada/Cascade Range region, from southeast Shasta County, south to northern Kern County, Santa Barbara County near Buellton, Riverside County in the Prado Basin riparian forest, and several locations in San Diego County (Sedgwick, 2000). As stated above in Section 3.2.1.6, Little Willow Flycatcher (*E. traillii brewsteri*), the breeding ranges of the little willow flycatcher and the southwestern willow flycatcher overlap in the vicinity of the HCP Planning Area.

There is one record from 1988 (CNDDB, 2013), presumably of the southwestern willow flycatcher, approximately 4 miles north of Cottonwood Creek (Figure 3-16). It is not noted whether the species was nesting or not. The HCP Planning Area has 5.38 acres of suitable habitat for southwestern willow flycatcher: 4.37 acres along the St. John’s River and 1.01 acres along Cottonwood Creek.

Results of Habitat Conservation Plan Planning Area Surveys

Nonprotocol-level surveys were conducted at the St. John’s River and Cottonwood Creek in the HCP Planning Area in 2011 (Quad Knopf, 2012a). Protocol-level surveys for southwestern willow flycatcher were conducted in 2012 at the St. John’s River and Cottonwood Creek (Quad Knopf, 2012b).

Surveys at the St. John’s River detected either a single flycatcher on two occasions or two flycatchers on a single occasion for 2 days during 2011 and 2012.The birds observed could not be identified to the subspecies level and could be either subspecies (Figure 3-17). No willow flycatchers were detected at Cottonwood Creek during surveys conducted in 2011 and 2012 (Quad Knopf, 2012b). Both the St. John’s River and Cottonwood Creek do not have a well-developed canopy layer or understory and are dry during summer. This habitat provides limited breeding opportunities for both flycatcher subspecies.

3.2.1.8 LEAST BELL’S VIREO (*VIREO BELLII PUSILLUS*)

Status

The least Bell’s vireo is Federally listed as endangered and State listed as endangered. There is no designated critical habitat for least Bell’s vireo near the HCP Planning Area. The nearest critical habitat is located 122.7 miles away, in Santa Barbara County.

Species Description

The least Bell's vireo is a small gray-green passerine 4–5 inches long that weighs between 7 and 10 grams. This is the only subspecies of four recognized Bell's vireo subspecies that breeds entirely in California. A second subspecies, *V. bellii arizonae*, has a limited distribution in California along the lower Colorado River, but it occurs primarily throughout Arizona, Utah, Nevada, and Sonora, Mexico. The subspecies are believed to be isolated from one another during both the breeding and wintering seasons (RHJV, 2004).

Habitat and Natural History

Least Bell's vireos are insectivores that catch prey primarily by foliage gleaning (picking prey from leaf or bark substrates), and hovering (removing prey from vegetation surfaces while fluttering in the air). Foraging occurs at all levels of the canopy but appears to be concentrated in the lower strata to midstrata in vegetation between 3 and 6 meters (9–18 feet) tall (RHJV, 2004). The least Bell's vireo has been recorded in dense riparian habitat dominated by willows (*Salix* spp.) from -54 meters (-175 feet) in Death Valley to 1,260 meters (4,100 feet) at Bishop, Inyo County (RHJV, 2004). The breeding season occurs typically between April and July, with three to five young per nesting attempt. Nests are typically placed within 1 meter of the ground in vegetation 2.8 to 5 meters tall, typically in willows, mulefat (*Baccharis glutinosa*), California wild rose (*Rosa californica*), mugwort (*Artemisia douglasiana*), Fremont cottonwood, and Western poison-oak. Least Bell's vireos winter in southern Baja California in a variety of habitats, including mesquite scrub in arroyos, palm groves, and hedgerows bordering agricultural and residential areas (RHJV, 2004).

Cowbird parasitism is considered a primary factor responsible for the species' decline, along with habitat degradation primarily from invasive riparian plant species, such as giant reed (*Arundo donax*). In heavily parasitized areas, up to four cowbird eggs may be found in vireo nests, particularly during the second half of the nesting season, when fewer hosts are available. Reports prepared before the implementation of cowbird management programs indicate that cowbirds parasitized 33–100 percent of vireo nests (USFWS, 2006b).

Distribution

The least Bell's vireo was formerly a common to locally abundant species in lowland riparian habitat, ranging from coastal southern California through the Sacramento and San Joaquin valleys as far north as Red Bluff (Tehama County) (RHJV, 2004). Populations also occurred in the foothill streams of the Sierra Nevada and Coast Ranges and in the Owens Valley, Death Valley, and scattered locations in the Mojave Desert. At the time of listing in 1986, only 300 pairs existed in the southern portion of its range (primarily San Diego County). Since the implementation of cowbird control and habitat restoration, the first breeding pair of vireos was detected in the San Joaquin Valley at the San Joaquin National Wildlife Refuge in Stanislaus County (USFWS, 2006b). The refuge is 131 miles away from the HCP Planning Area.

The nearest CNDDB occurrence is 55 miles away from the HCP Planning Area (CNDDB, 2013). This 1891 record is presumed to have been extirpated because of cowbird nest parasitism. No least Bell's vireos were detected at the St. John's River or Cottonwood Creek (Quad Knopf, 2012b). Because their current regional distribution is limited to the San Joaquin National Wildlife Refuge, located 131 miles away, it is unlikely that least Bell's vireos nest along the St. John's River or Cottonwood Creek.

Results of Habitat Conservation Plan Planning Area Surveys

Four protocol-level surveys were conducted for this species during the breeding season, and two additional surveys were conducted between August 1 and 31, 2011. Nonprotocol-level surveys were conducted at the St. John's River and Cottonwood Creek in the HCP Planning Area in 2011 (Quad Knopf, 2012a) for special-status riparian bird species. Protocol-level surveys for both flycatcher subspecies were conducted in 2012 (Quad Knopf, 2012b) at the St. John's River and at Cottonwood Creek in the HCP Planning Area. No least Bell's vireos were detected during protocol-level surveys or during 2011 and 2012 surveys at both riparian survey sites.

Habitat at the St. John's River and Cottonwood Creek is marginal for the least Bell's vireo for nesting but may be used for foraging during migration. The least Bell's vireo prefers to nest in dense, early successional riparian vegetation 3–6 feet tall underneath a dense stratified canopy. The riparian habitat along the St. John's River is a maximum of 200 feet wide on both the south and the north banks and consists primarily of mature riparian habitat with a sparse understory layer or dense shrubby areas without a stratified canopy layer. The riparian habitat along the St. John's River is not ideal for breeding pairs of least Bell's vireo. The riparian habitat along Cottonwood Creek is approximately 241 feet wide on both the south and the north banks and consists mostly of mature riparian habitat with a semi-enclosed canopy and a sparse understory or patchy young growth without a stratified canopy layer (Quad Knopf, 2011c). These habitat conditions along Cottonwood Creek are not ideal for the least Bell's vireo nesting.

3.2.1.9 WESTERN BURROWING OWL (*ATHENE CUNICULARIA*)

Status

The Western burrowing owl is a California species of special concern. Because the species is not Federally listed, no critical habitat has been designated.

Species Description

The Western burrowing owl is a small, long-legged owl found in open landscapes in North and South America. It has bright yellow eyes, with a flattened facial disc. Adults have brown heads and wings with white spotting. The chests and abdomens are white.

Habitat and Natural History

Western burrowing owls nest in small-mammal burrows, most frequently those of California ground squirrels. Although primarily crepuscular when foraging, burrowing owls will hunt for insects and small vertebrates during both day and night. Their breeding season begins in March or April and extends through August. Average clutch size is five or six eggs, and they rarely produce a second brood. Where site conditions are optimal, Western burrowing owls sometimes form loose colonies, which is unusual for avian predators (Haug et al., 1993).

Distribution

Western burrowing owls are summer residents in the western half of the United States and year-round residents in the southwestern portion of the United States and northern and central Mexico. In California, they inhabit the lowlands of the Central Valley and the desert environments of the southeastern part of the state. Although

Western burrowing owls still exist in most portions of their historic range, their population densities have declined because of habitat loss, degradation, and fragmentation.

There are five records of Western burrowing owl (EOID 69904, EOID 69899, EOID 69905, EOID 72574, and EOID 72586) near the HCP Planning Area (Figure 3-18). The nearest occurrence (EOID 69905) is located approximately 1.4 miles north of the HCP Planning Area, where two adults were observed at two burrows located approximately 0.8 mile east-southeast of St. Mary's Church, just south of Sontag Ditch on February 9, 2006. The surrounding habitat consisted of annual grassland and a vernal pool.

The entire HCP Planning area is considered suitable habitat for the Western burrowing owl, except for developed land cover, orchards, and aquatic habitats. The areas containing annual grassland east of the Friant-Kern Canal in the east-west portion of the HCP Planning Area have the highest quality for Western burrowing owl nesting habitat, but open agricultural areas may also provide suitable habitat for this species, especially along the margins of fields or in open areas in agricultural land cover in the north-south portion of the HCP Planning Area. In total, 1,048 acres of suitable breeding and foraging habitat for this species are located in the 3,385-acre HCP Planning Area (Table 3-5, presented at the end of this chapter). An additional 343 acres of agricultural row crops and other seasonally dry cover (Table 3-4) provides suitable foraging habitat for this species in the HCP Planning Area (Table 3-5).

Results of Habitat Conservation Plan Planning Area Surveys

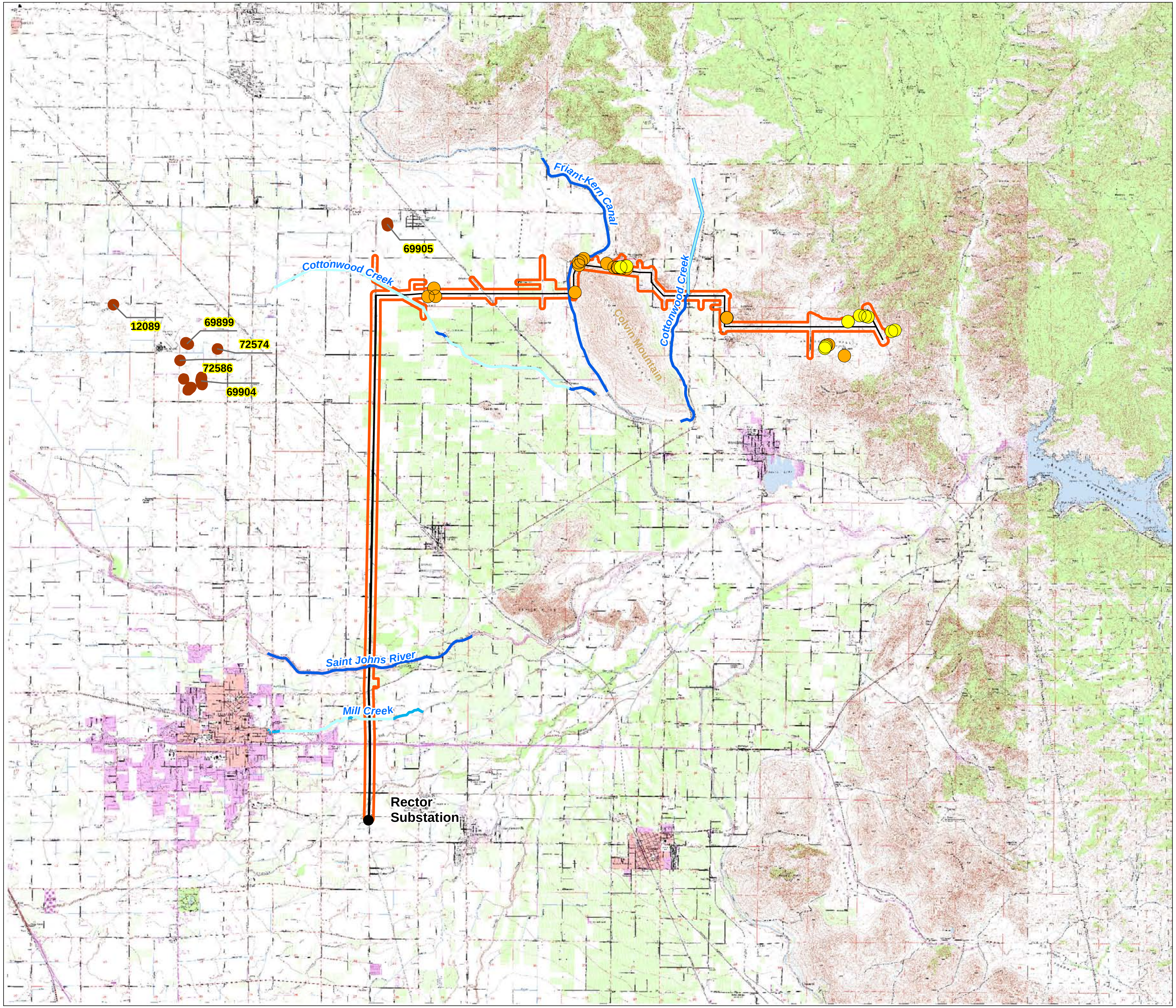
Four Western burrowing owl adults were identified in the HCP Planning Area (Figure 3-18) in 2011 by Quad Knopf (2012c) (Figure 3-18). All the sightings were east of the Friant-Kern Canal. One of these adults was associated with a burrow that was considered to be active because it had cast pellets and prey remains near its entrance. Another active burrow was identified less than 350 feet south of this burrow, although no adult was observed near its entrance. Neither of these two burrows was found to be intact during subsequent visits. Cattle grazing was suspected to have been the cause of both burrow collapses. Two other sightings of an adult Western burrowing owl were made in the vicinity of these two burrows. One of these sightings was located approximately 230 feet north of the HCP Planning Area. It should be noted that each of these three sightings may have been associated with the same individual because they were made on separate survey dates. The fourth Western burrowing owl was identified near the east terminus of the HCP Planning Area. It appeared to be a transient forager because it was not associated with any active burrow. A fifth Western burrowing owl was observed near an active burrow outside of the HCP Planning Area approximately 0.5 mile south of the eastern terminus of the Planning Area. All the sightings were made between October 19, 2010, and August 4, 2011.

3.2.1.10 San Joaquin Kit Fox (*Vulpes macrotis mutica*)

Status

The San Joaquin kit fox is both Federally listed and State listed as endangered. No critical habitat has been designated by USFWS for the San Joaquin kit fox. A Federal recovery plan for San Joaquin kit fox has been prepared (USFWS, 1998).

Figure 3-18
Burrowing Owl Known Occurrences near the HCP Planning Area Cross Valley Line



Cross Valley Line

HCP Planning Area

Burrowing Owl Known Distribution

Occupied Burrows

Suitable Burrow Habitat

CNDDB Occurrences

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

Note:

CNDDB - California Natural Diversity Database (3/12/2013)

N
W E
S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; DFG 3/05/2013

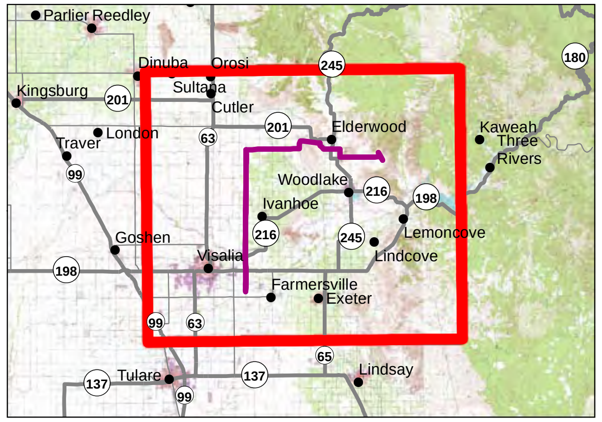


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Table 3-4
Suitability of Land Cover Types as Habitat for Covered Species[1]

Species	Land Cover Type											
	Developed	**Agricultural—Orchard**	**Agricultural—Vineyard**	**Agricultural—Row/field Crop**	**Annual Grassland**	**Vernal Pool/Swale**	**Puddle**	**Basin/Stock Pond**	**Riparian**	**Riverine**	**Lined Canal**	**Ditch**
Wildlife Species												
Vernal pool fairy shrimp	–	–	–	–	–	S	S	S	–	–	–	–
Vernal pool tadpole shrimp	–	–	–	–	–	S	–	S	–	–	–	–
Valley elderberry longhorn beetle	–	–	–	–	S[2]	–	–	–	S	–	–	–
California tiger salamander	–	M	M[1]	M[1]	M, F, A	R[3]	–	R[3]	–	–	–	–
Western spadefoot toad	–	–	–	–	A, F	R	R	–	–	–	–	–
Little willow flycatcher	–	–	–	–	–	–	–	–	F, R	–	–	–
Southwestern willow flycatcher	–	–	–	–	–	–	–	–	F, R	–	–	–
Least bell’s vireo	–	–	–	–	–	–	–	–	F, R	–	–	–
Western burrowing owl	–	–	–	F	F, R	F[4]	F[4]	F[4]	–	–	–	–
San Joaquin kit fox	–	M, F[4]	M, F	M, F	M, F, R	M, F[4]	M, F[4]	M, F[4]	–	–	M	M
Plant Species												
Hoover’s spurge	–	–	–	–	–	S	–	–	–	–	–	–
San Joaquin Valley Orcutt grass	–	–	–	–	–	S	–	–	–	–	–	–
Spiny-sepaled button-celery	–	–	–	–	–	S	S	S	–	–	–	–

Key: S = suitable habitat for every life history stage/species normal behaviors (i.e. breeding, feeding, or sheltering), A = aestivation/sheltering suitable- habitat, F = foraging/feeding suitable-habitat, M =used for movement/dispersal, R = breeding/reproduction suitable-habitat.

Notes:

[1] The habitat value and likelihood of occupancy of suitable habitat varies considerably among land cover types, and with surrounding land cover and landscape context.

[2] Habitat provided by elderberry shrubs that can also occur at some locations in grassland land cover.

[3] Within 1.2 miles of suitable aquatic breeding habitat

[4] Habitat provided for western burrowing owl and San Joaquin kit fox when dry.

Source: Data compiled by AECOM in 2013

Species Description

The San Joaquin kit fox is a subspecies of the kit fox (*Vulpes macrotis*) that has a broad distribution in the southwestern United States and northern Mexico. It has a small, slim body with an average body length of 30 inches; stands about 12 inches tall at the shoulder; and has long legs, large ears, and a long, bushy tail that tapers at the tip. The average weight of an adult male is about 5 pounds. The ears are conspicuously large and densely covered on the inside with stiff, white hairs. The summer coat is light buff to buff-gray on the back and white on the belly; its winter coat is grizzled gray on the back, rust to buff on the sides, and white beneath. The tail is distinguished by a prominent black tip (USFWS, 1998 and 2010).

Habitat and Natural History

The San Joaquin kit fox is adapted to arid land and is found in habitats characterized by sparse or absent shrub cover, sparse ground cover, and short vegetative structure (USFWS, 2010). The historical range of San Joaquin kit fox included the San Joaquin Valley floor and the gradual slopes of the surrounding foothills from southern Kern County north to Tracy in San Joaquin County, and portions of the inner Coast Ranges, such as the Carrizo Plain, Salinas Valley, Temblor Range, Cholame Hills, and Elkhorn Plain (USFWS, 1998). In this historic range, the species used alkali scrub/shrub and arid grasslands over open, level, sandy ground that was relatively stone free to 3–5 feet in depth (USFWS, 2010). Areas where water tables are high or soils have impenetrable hardpans or are shallow typically have had little or no denning use by kit foxes (USFWS, 1998).

The present-day distribution consists of fragmented populations that use remaining natural lands, mostly from Merced County southward to southern Kern County. The largest remaining populations occur in western Kern County in and near the Elk Hills and the Buena Vista Valley, as well as in the Carrizo Plain in San Luis Obispo County (USFWS, 1998). San Joaquin kit fox have large home ranges, especially in disturbed areas (such as in the foothills along the eastern portion of the San Joaquin Valley). Home ranges for this species near the HCP Planning Area can be large and have been documented to encompass more than 2,800 acres (USFWS, 2010). Dens can be more than 2 miles from each other. It is suspected that extremely large home range sizes are frequent along the foothills of the Sierra Nevada where San Joaquin kit foxes occur at low densities (USFWS, 2010).

San Joaquin kit fox can be tolerant of human disturbances and, to a minimal extent, will use developed land cover for denning and agricultural lands for foraging and movement (including migration). However, the use of agricultural lands by San Joaquin kit fox depends on habitat openness, prey composition and density, and den refugia opportunities (USFWS, 2010).

San Joaquin kit fox are reputed to be poor diggers, and dens are usually found in areas with loose-textured, friable soils (Morrell, 1972; USFWS, 1983). The San Joaquin kit fox uses dens for shelter, protection, and rearing of young (USFWS, 1998). Dens may be used year-round. Dens are usually located on loose-textured soils on slopes less than 40 degrees, but the characteristics of dens (e.g., number of openings, shape, slope, aspect) vary across the fox's geographic range. Most dens are located in flat terrain or on the lower slopes of hills that are free from periodic inundation and/or not consistenty saturated soils. San Joaquin kit foxes modify and occupy dens constructed by other animals, such as ground squirrels and coyotes (*Canis latrans*), and have been known to use human-made structures as den sites (e.g., culverts, abandoned pipelines, or banks in sumps or roadbeds) (USFWS, 1998 and 2010). The results of most studies have suggested that most individuals create dens by enlarging

California ground squirrel or American badger burrows (Jensen, 1972; Morrell, 1972; Orloff et al., 1986; USFWS, 2010).

Dense populations of kangaroo rats (*Dipodomys* spp.) historically supported the most robust populations of San Joaquin kit fox, with other rodents and lagamorphs, such as California ground squirrels (*Spermophilus beecheyi*), rabbits (*Sylvilagus* spp.), hares (*Lepus* spp.), and white-footed mice (*Peromyscus* spp.), supplementing the diet as the seasons vary (USFWS, 2010). Kit fox populations fluctuate in relation to the availability of precipitation-reliant prey species. During periods of persistent drought, seed production by annual grasses and forbs declines, leading to subsequent declines in the populations of kangaroo rats and other small to medium-sized rodents.

The San Joaquin kit fox is primarily nocturnal. An individual San Joaquin kit fox has an average home range of 1 to 2.5 square miles (1,600 acres) (Knapp, 1978; Morrell, 1972; Haight et al., 2002). Adult foxes are usually solitary during late summer and fall. By September and October, adult females begin to excavate, clean, and enlarge their pupping dens. Mating occurs between December and March (USFWS, 1998). Pups are typically born in late February or early March (Egoscue, 1962; Morrell, 1972); emerge from dens in March and April; and begin foraging for themselves between June and August, dispersing shortly thereafter in August or September (Morrell, 1972; USFWS, 2010).

Except for developed and aquatic land cover types, the entire HCP Planning Area may provide suitable habitat for the kit fox, because it is located in the historical range of the species and because kit fox are known to use a variety of disturbed and natural habitats. However, kit fox use of agricultural and developed land cover is limited, and agricultural land is not suitable for long-term use by kit fox (USFWS, 2010). Rather, kit fox use of agricultural land cover is primarily for foraging and movement and is concentrated near field edges and where agricultural land borders grassland (USFWS, 2010). The portion of the HCP Planning Area east of the Friant-Kern Canal has higher quality habitat for San Joaquin kit fox because it is part of more continuous area of natural grassland vegetation with fewer barriers to kit fox movement.

Distribution

The San Joaquin kit fox historically occupied the valley floor and foothills in the vicinity of the HCP Planning Area. The kit fox currently is found in very low numbers along the western foothills of the Sierra Nevada, at least as far north as southeastern Stanislaus County near LaGrange. Within the range of San Joaquin kit fox, occupied habitat has included isolated pockets of natural vegetation in the valley floor in Kern, Kings, Tulare, Fresno, Madera, and Merced counties. Kit fox occurrence has also been documented in the interior valleys of Monterey, San Benito, and Santa Clara counties and in the upper Cuyama watershed of Ventura, San Luis Obispo, and Santa Barbara counties. The species occurs in low numbers along the foothills in Tulare County (USFWS, 2010).

Eight occurrences of the San Joaquin kit fox have been documented near up to 6 miles from the HCP Planning Area (CNDDB, 2013) (Figure 3-19). All documented occurrences are from incidental observations between 1972 and 1994 and are not based on protocol-level surveys conducted in this area of Tulare County. One record from 1988 documents a San Joaquin kit fox in the HCP Planning Area (EOID 67535). This sighting occurred on Avenue 344 and Road 148, northwest of Ivanhoe, where an adult female was captured and relocated by a California Department of Fish and Game (DFG) (now California Department of Fish and Wildlife [CDFW]) employee to Kaweah Oaks Preserve, which is approximately 4 miles east of the HCP Planning Area. Another record, from July 1975 (EOID 67933), was located approximately 0.9 mile southwest of the southern terminus of the HCP Planning Area. This sighting was a deceased San Joaquin kit fox in a road approximately 3 miles southeast of Visalia, just west of Oakdale Avenue and Cameron Creek (CNDDB, 2013). In 1988, a San Joaquin kit fox was observed near its den approximately 1.8 miles east of the HCP Planning Area (EOID 67549). In 1990, a kit fox was observed near Woodlake approximately 1.5 miles south of the eastern end of the HCP Planning Area (EOID 70610).

In its first San Joaquin kit fox Five-Year Review, USFWS (2010) updated goals of the 1998 species recovery plan to better describe corridors along the Sierra Nevada foothills that could connect the fragmented populations in the species' range. Annual grassland and other types of natural land cover are most suitable denning, movement, and foraging habitat for San Joaquin kit fox.

Results of Habitat Conservation Plan Planning Area Surveys

Quad Knopf (2011d) conducted USFWS protocol-level surveys for the kit fox in suitable habitat along the entire 23-mile HCP Planning Area in 2011. This survey involved use of scent stations with and without cameras, spotlight surveys, and den surveys. No San Joaquin kit fox or other special-status mammals were recorded during these surveys. Figures 3-20a and 3-20b illustrate the location of potential dens found during the surveys. Kit fox construction monitoring (USFWS, 2011b) at the Big Creek Rebuild site in the western half of the north-south portion of the HCP Planning Area was conducted during summer and fall 2012, and no kit fox or kit fox sign was observed.

In the HCP Planning Area, 1,868 acres of agricultural and seasonally dry land cover provide foraging and movement habitat and 1,048 acres of annual grassland provide movement, foraging, and denning habitat for San Joaquin kit fox (Table 3-4 and Table 3-5, presented at the end of this chapter).

3.2.2 HABITAT CONSERVATION PLAN PLANT COVERED SPECIES

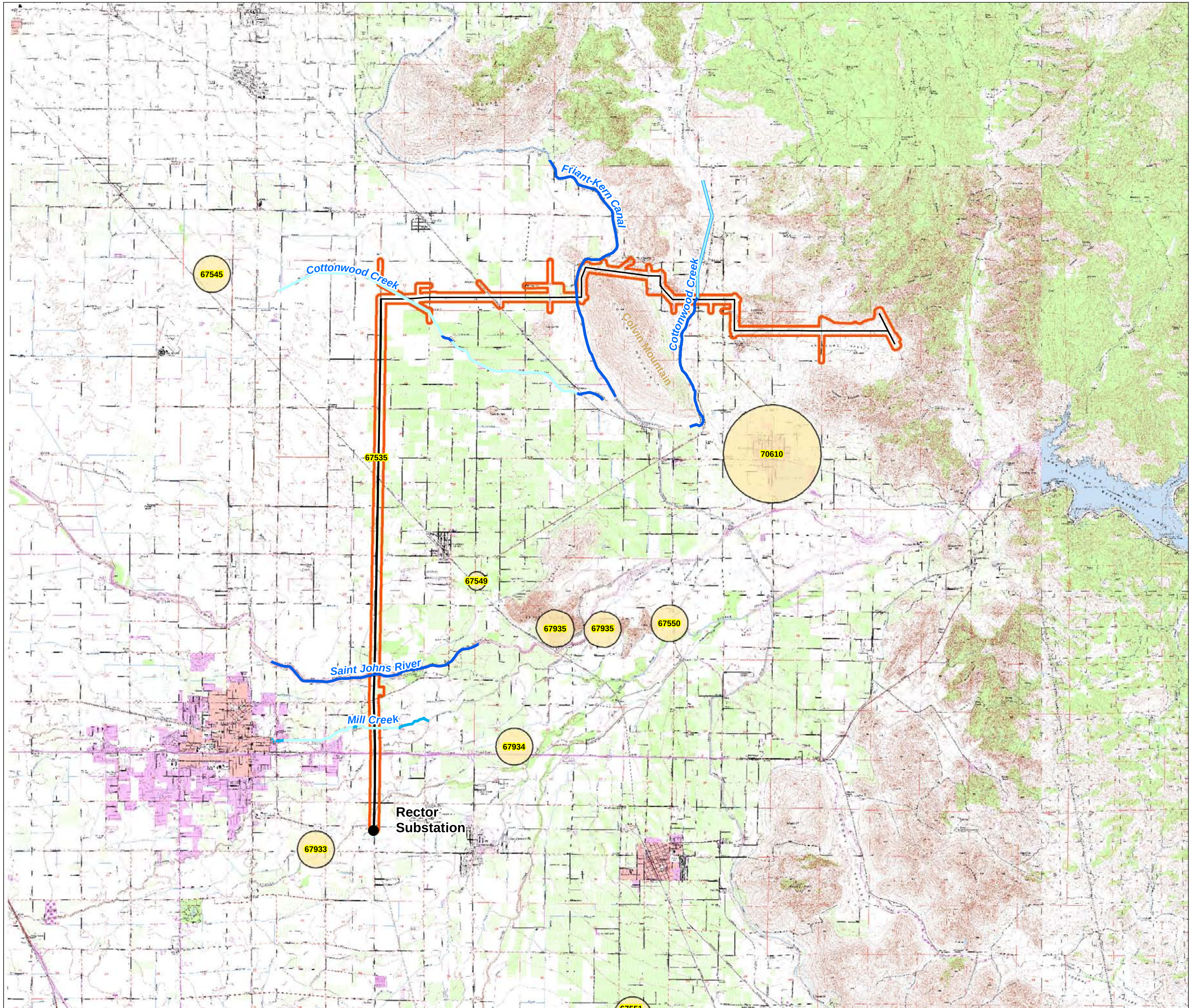
This section describes the existing environmental conditions for plant Covered Species within the HCP Planning Area. Surveys for these species were conducted within the HCP Planning Area in the spring and summer of 2010 and 2011 (Quad Knopf, 2011b and 2011d). These surveys followed the 2009 protocols of the USFWS Sacramento Fish and Wildlife Office and CDFW for plant surveys. These protocols include California Native Plant Society and CNDDB database searches, visits to reference populations to verify phenology, and surveys of potential habitat during appropriate bloom times as determined by visits to reference populations.

3.2.2.1 HOOVER'S SPURGE (*CHAMAESYCE HOOVERI*)

Status

Hoover's spurge is Federally listed as threatened and State listed as endangered. Seven areas within Tulare County are designated as critical habitat for Hoover's spurge. The HCP Planning Area contains 861.82 acres of critical habitat for Hoover's spurge; 1.13 acres are located west of the Friant-Kern Canal in Unit 7B, and 215.54 acres are located in Unit 7C and 645.15 acres in Unit 7D east of the Friant-Kern Canal (Figure 3-21). A Federal recovery plan has been prepared for this species (USFWS, 2005).

Figure 3-19
San Joaquin Kit Fox CNDDB Records near the HCP Planning Area Cross Valley Line



Cross Valley Line

HCP Planning Area

San Joaquin Kit Fox

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

Note:

CNDDB - California Natural Diversity Database (3/12/2013)

N
W E
S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; DFG 3/05/2013

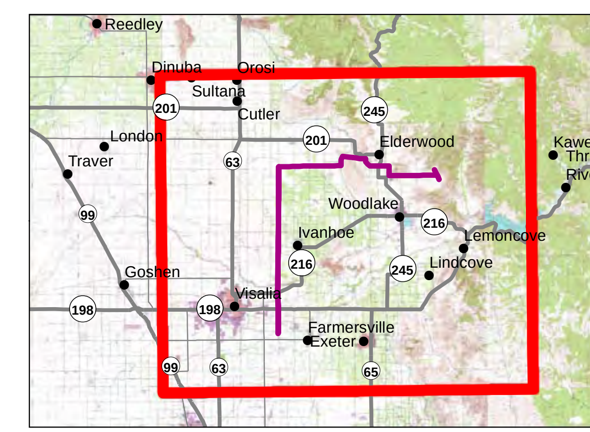


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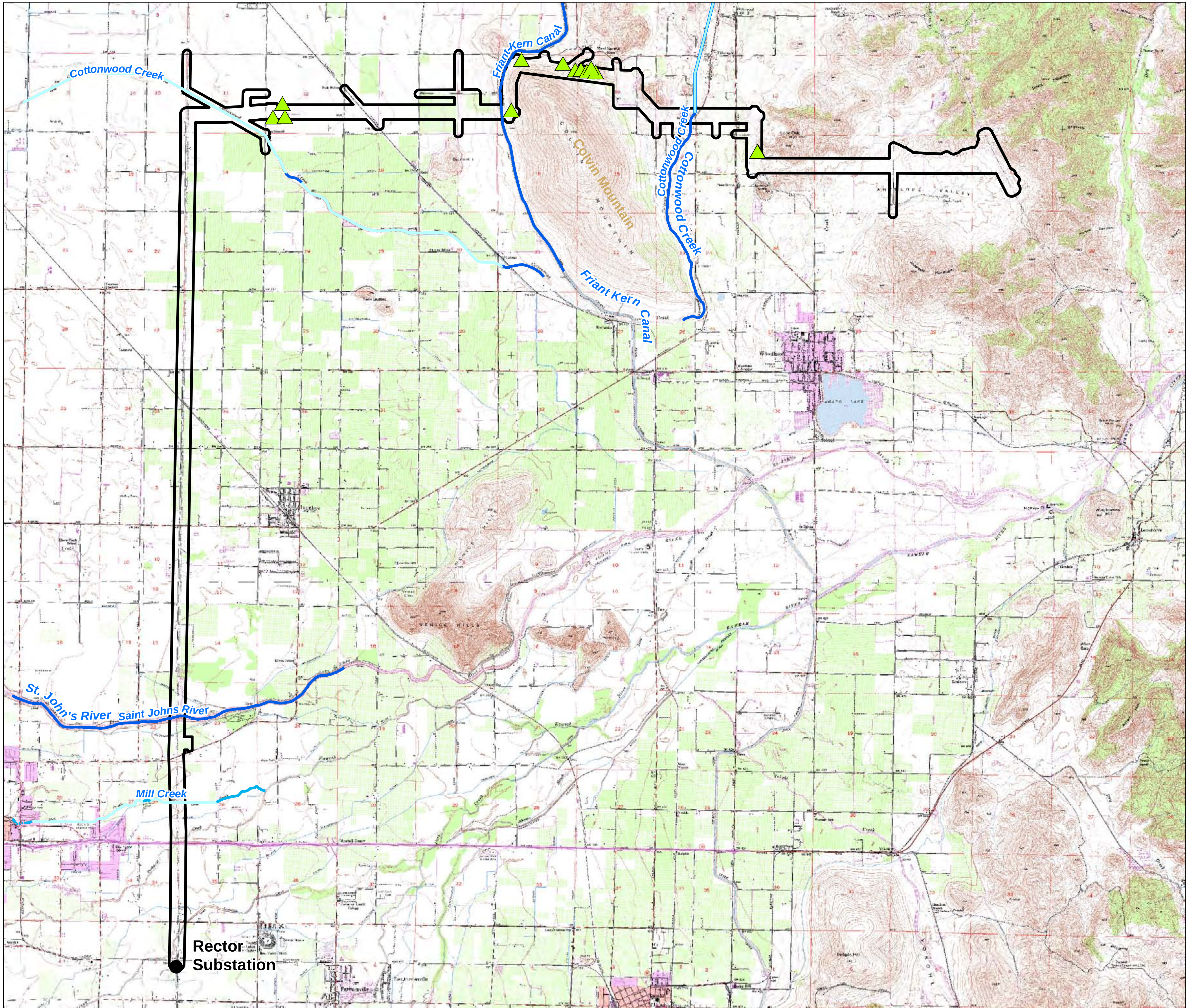
Figure 3-20a
San Joaquin Kit Fox Potential Denning Sites in the HCP Planning Area Cross Valley Line



Cross Valley Line

HCP Planning Area

Potential Kit Fox Denning Sites

NHD Stream Code

Artificial Path

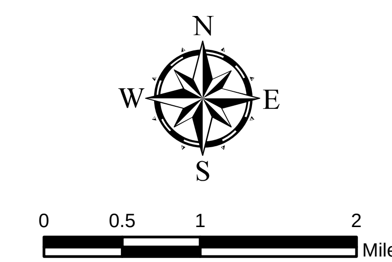
Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

Note:
Based on surveys conducted during November 2011



Source: ESRI 2010; SCE 2/26/2013;Quad Knopf Nov 2011

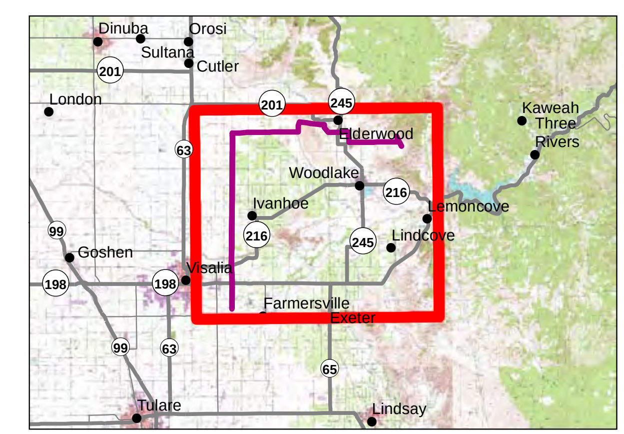


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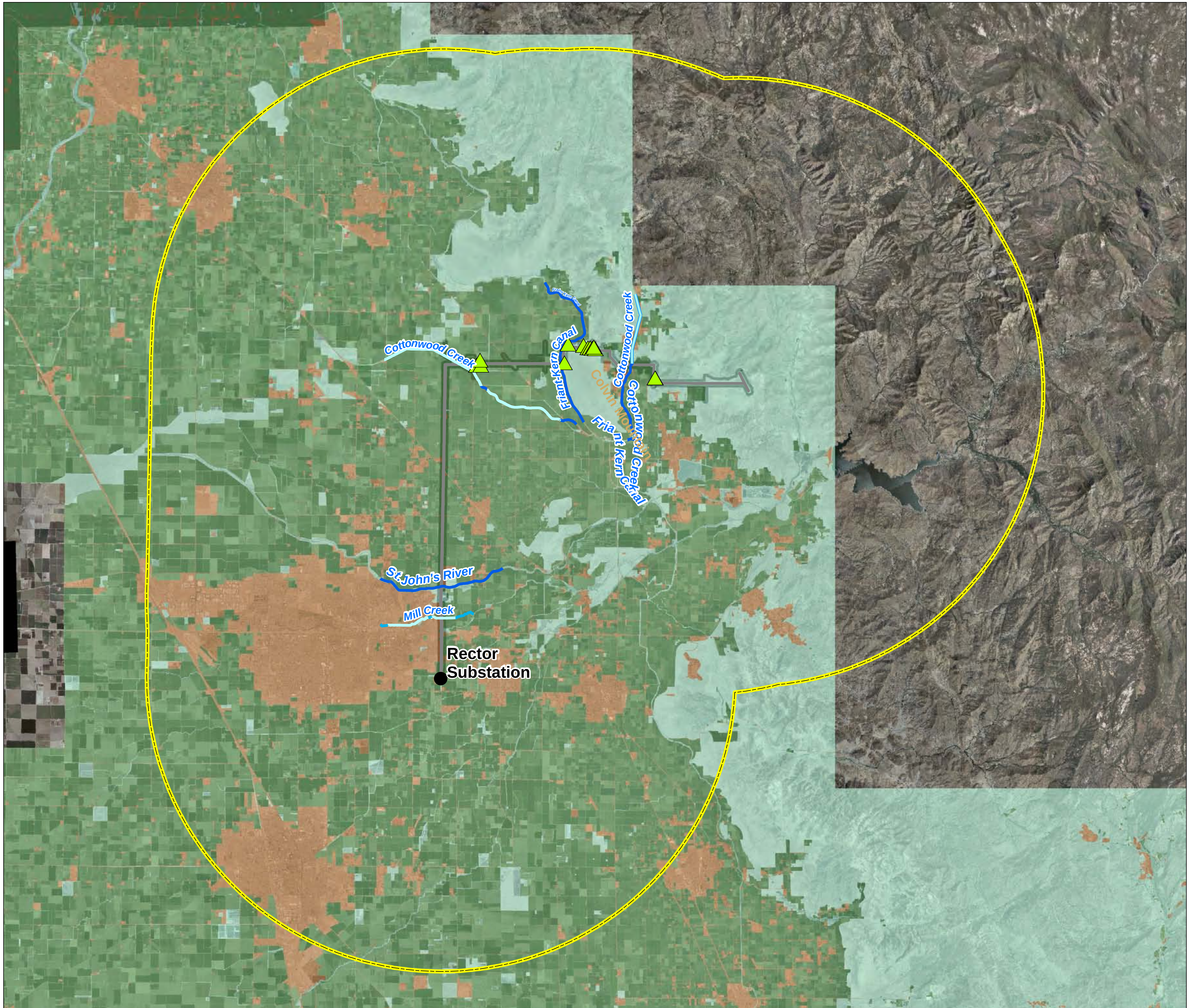
Figure 3-20b
San Joaquin Kit Fox Potential Denning Sites in the HCP Planning Area Cross Valley Line



Cross Valley Line
HCP Planning Area
Potential Kit Fox Denning Sites
NHD Stream Code
Artificial Path
Canal/Ditch
Connector
Stream/River: Intermittent
Stream/River: Perennial

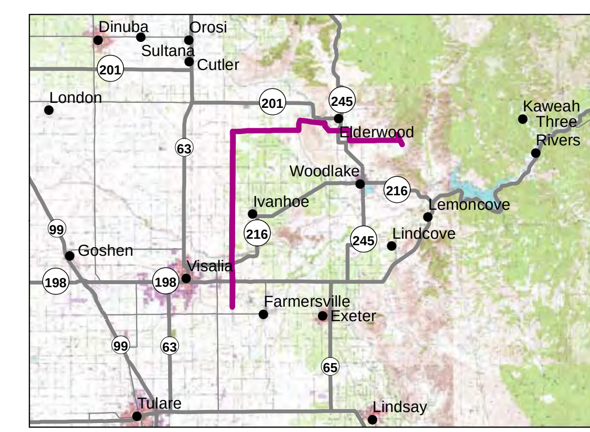
Landcover
Agriculture
Natural
Developed
10 Mile Buffer of HCP Boundary

Note:
Based on surveys conducted during November 2011

N W E S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013;Quad Knopf Nov 2011



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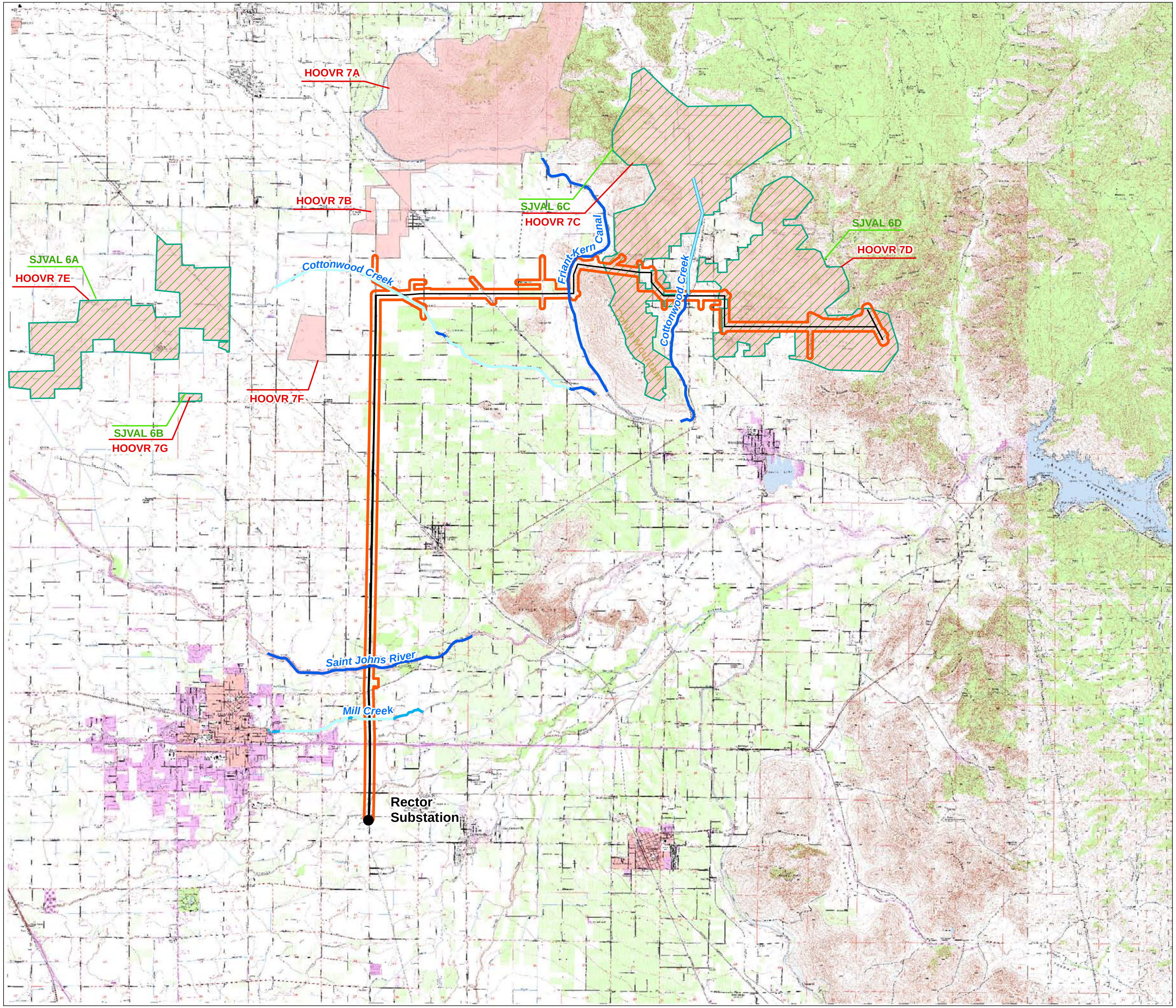


Figure 3-21
Plant Covered Species Critical Habitat near the HCP Planning Area Cross Valley Line

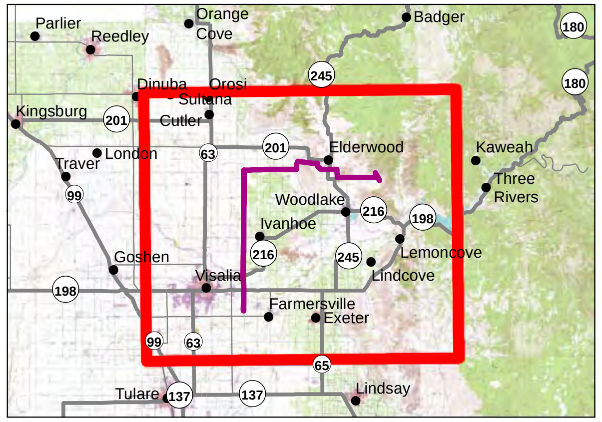
Cross Valley Line
HCP Planning Area
San Joaquin Valley Orcutt Grass
Hoover's Spurge
NHD Stream Code
Artificial Path
Canal/Ditch
Connector
Stream/River: Intermittent
Stream/River: Perennial

HOOVR 7G Hoover's Spurge Critical Habitat Mapunit
SJVAL 6A San Joaquin Valley Orcutt Grass Critical Habitat Mapunit

N
W E
S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; USFWS 3/12/2013



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C:\Projects\SJXVL_Project_012006\Coral_Data\cwelton\MAPS\MAPS\HCP\Chapter_3\Update_JH\Figure3-21_SpecialStatusPlants_CriticalHab.mxd Date Saved: 5/30/2013 10:25:34 AM

Most of the HCP Planning Area east of the Friant-Kern Canal is in the Tulare Core Recovery Area. Also, the northernmost extension of the HCP Planning Area west of the Friant-Kern Canal extends approximately 420 feet into the Cottonwood Creek Core Recovery Area. However, no suitable habitat for Hoover’s spurge is present in this portion of the HCP Planning Area. For the Tulare Core Recovery Area, recovery criteria include protection of 85 percent of suitable habitat and collection of seeds from at least one population in the core area.

Species Description

Hoover’s spurge is part of the Euphorbiaceae family, forming gray-green mats 2–40 inches in diameter. The stems are hairless and contain milky sap. The tiny leaves are opposite, rounded to kidney-shaped, with an asymmetric base and a toothed margin. None of the flowers have petals, but instead have white appendages on the edge of the flowering cup resembling petals.

Habitat and Natural History

This plant is restricted to vernal pool habitats. Although this species occurs in vernal pools with a wide range of sizes and depths, and in a variety of settings in vernal pools, deeper pools apparently provide better habitat for the species (USFWS, 2005). Hoover’s spurge blooms from July to September when the vernal pools are dry. The elevation range of this species is from 80 to 820 feet above mean sea level (USFWS, 2007a).

Distribution

The historical localities for Hoover’s spurge were in the northeastern Sacramento Valley, San Joaquin Valley, Solano-Colusa area, and in the Southern Sierra Foothills Vernal Pool Region (USFWS, 2005). The primary area of concentration for extant populations of this species is within the Northeastern Sacramento Valley Vernal Pool Region (USFWS, 2007). The Vina Plains of Tehama and Butte counties contain 14 of the 26 known extant occurrences (CNDDB, 2013) in an area of about 35 square miles. One other site in the same region is near Chico in Butte County. Seven of the extant occurrences are in the Southern Sierra Foothills Vernal Pool Region, including five in the Visalia-Yettem area of Tulare County and two in the Hickman–La Grange area of Stanislaus County.

There are no known occurrences of Hoover’s spurge within the HCP Planning Area. The critical habitat units in the HCP Planning Area are based on the presence of the species’ primary constituent elements, rather than on occupancy by the species. The closest known occurrence is approximately 0.47 mile from the HCP Planning Area (EONDX 32048), and there are five other occurrences within 5 miles of the HCP Planning Area (EONDX 407, 2447, 18740, 32044, 32048, and 32049) (Figure 3-22).

Results of Habitat Conservation Plan Planning Area Surveys

The cover type located within the HCP Planning Area east of the Friant-Kern Canal has the potential to support populations of Hoover’s spurge. Vernal pools are present within the HCP Planning Area east of the Friant-Kern Canal, and the highest concentrations of these vernal pools are located in the easternmost 4 miles of the HCP Planning Area within a matrix of annual grassland. However, botanists did not observe Hoover’s spurge during protocol-level surveys of the HCP Planning Area completed in 2010 and 2011 (Quad Knopf, 2011b and 2011d), during the peak bloom period in July and August.

3.2.2.2 San Joaquin Valley Orcutt Grass (*Orcuttia inaequalis*)

Status

San Joaquin Valley Orcutt grass is Federally listed as threatened and State listed as endangered. Four areas in the vicinity of the HCP Planning Area are designated as critical habitat for San Joaquin Valley Orcutt grass. In total, 860.69 acres of critical habitat for San Joaquin Valley Orcutt grass have been designated in the HCP Planning Area—215.54 acres occur in Unit 6C and 645.15 acres in Unit D. Figure 3-21 illustrates the location of critical habitat in relationship to the HCP Planning Area. A Federal recovery plan has been prepared for this species (USFWS, 2005).

Most of the HCP Planning Area east of the Friant-Kern Canal is in the Tulare Core Recovery Area. Also, the northernmost extension of the HCP Planning Area west of the Friant-Kern Canal extends approximately 420 feet into the Cottonwood Creek Core Recovery Area. However, no suitable habitat for San Joaquin Valley Orcutt grass exists in this portion of the HCP Planning Area. For the Tulare Core Recovery Area, recovery criteria include protection of 85 percent of suitable habitat and collection of seeds from at least one population in the core area.

Species Description

San Joaquin Valley Orcutt grass is characterized by an inflorescence consisting of narrow, flattened spikelets, each of which has two glumes at the base. Orcuttia species produce three different types of leaves during their life cycle: a submerged basal rosette of five to eight cylindrical, juvenile leaves; intermediate leaves in which the submerged portion is cylindrical but the upper portion has a flat, floating blade; and terrestrial leaves with a flattened blade and loosely sheathing base, which develop after the pools dry (USFWS, 2005).

Habitat and Natural History

San Joaquin Valley Orcutt grass is an annual that employs C4 photosynthesis and distinct growth phases to maintain growth in vernal pools from inundation to a month or more after pools have dried (Keeley, 1998). San Joaquin Valley Orcutt grass specifically requires deeper vernal pools, with inundation for at least part of the year for seed germination and its juvenile aquatic growth stage (Stone et al., 1988). Because its habitat is inundated for an average of 3 months each year, San Joaquin Valley Orcutt grass has evolved specific adaptations for aquatic growth (Keeley, 1998). A key adaptation unique to Orcuttia species is floating juvenile leaves produced during inundation. Once standing water has evaporated, pointed terrestrial leaves form. The flowering period begins after the pool dries completely, peaking in mid-June with extended blooms in August and September occurring during suitable growing conditions.

San Joaquin Valley Orcutt grass is a vernal pool obligate species; its life cycle is linked to vernal pool hydrology (USFWS, 2012). Seed germination, juvenile aquatic stage, and flowering are all determined by the timing and duration of the inundation period (USFWS, 2012). Above-average rainfall promotes larger populations of San Joaquin Valley Orcutt grass, but population responses vary by pool (Griggs and Jain, 1983). Populations vary in size by one to four orders of magnitude through successive years, returning to previous levels even after 3–5 consecutive years when no mature plants are present (Holland, 1987). The seeds can remain dormant for a minimum of 3–4 years, germinating when they have been immersed for a prolonged period (USFWS, 2005). The variability in annual precipitation affects the accuracy and predictability of population estimates and trends (USFWS, 2005).

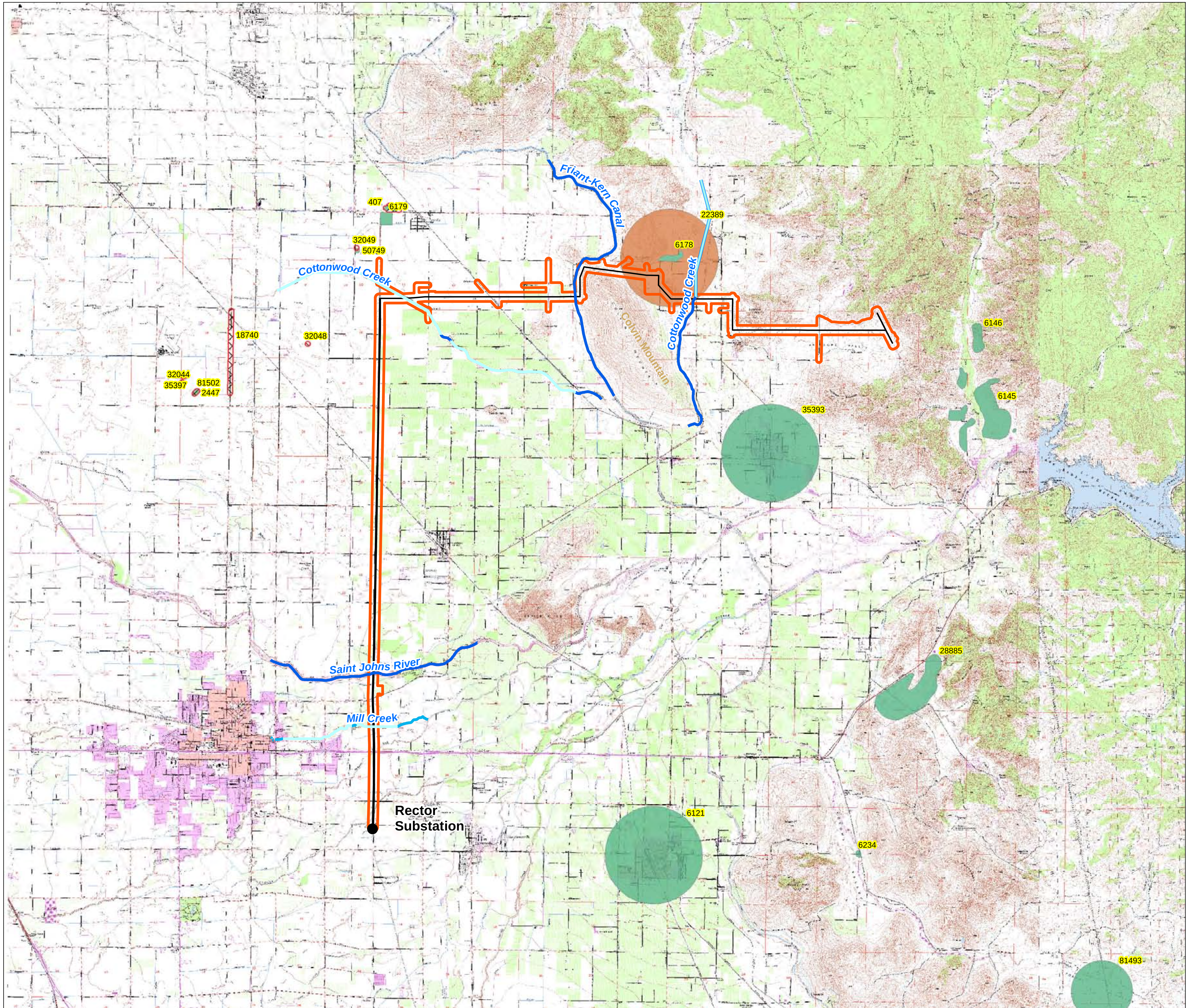


Figure 3-22
Plant Covered Species CNDDB Records within and near the HCP Planning Area Cross Valley Line

Cross Valley Line

HCP Planning Area

Special Status Plant Species

Hoover's spurge

San Joaquin Valley Orcutt grass

spiny-sepaled button-celery

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

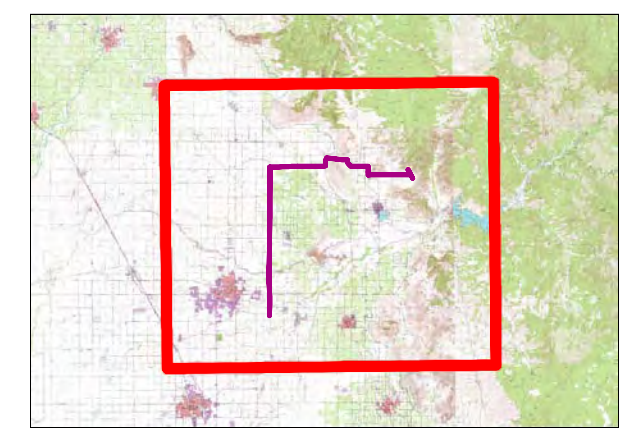
Note:

CNDDB - California Natural Diversity Database (3/12/2013)

N W E S

0 1 2 4 Miles

Source: ESRI 2010; SCE 2/26/2013; DFG 3/05/2013



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This species occurs solely in the Southern Sierra Foothills Vernal Pool Region from 35 to 2,475 feet in elevation (Keeler-Wolf et al., 1998). It is presumed to be the only member of the Orcuttieae tribe that is entirely endemic to the San Joaquin Valley. Knowledge of the historic range of Orcuttieae species in the Central Valley is limited because of the widespread agricultural development that preceded the study of this grass tribe (USFWS, 2012). In the southern Sierra Nevada foothills, San Joaquin Valley Orcutt grass occurs primarily in northern claypan, northern hardpan, and northern basalt flow vernal pools (Sawyer and Keeler-Wolf, 1995) on alluvial fans, high and low stream terraces (Stone et al., 1988), and tabletop lava flows (Stebbins et al., 1995). The predominant physiographic and edaphic settings for this species include high terrace sites with the Redding soil series, lower terraces with San Joaquin soil series, and sites with shallow, residual soils of the Pentz series underlain by well-cemented tuffaceous alluvium (USFWS, 2012). Populations of San Joaquin Valley Orcutt grass occur on Riverbank, North Merced gravels, and Mehrten geological surfaces, which could relate to those soil surfaces that support larger pools (USFWS, 2012). All soils underlying pools containing San Joaquin Valley Orcutt grass populations are acidic, but vary in texture from clay to sandy loam.

The primary constituent elements for this species are provided by vernal pools/swales, and the surrounding annual grassland that constitutes the vernal pool watershed. Vernal pools/swales are present in the HCP Planning Area east of the Friant-Kern Canal.

Distribution

San Joaquin Valley Orcutt grass has apparently been extirpated from Stanislaus County but remains in Fresno, Madera, Merced, and Tulare counties (USFWS, 2005; CNDDB, 2013). The highest concentrations are northeast of Merced. Tulare County populations are known from the Ivanhoe and Monson U.S. Geological Survey quadrangles (CNDDB, 2013) and are still considered extant.

Populations are known to occur at the CDFW Stone Corral Ecological Reserve near Sequoia Field, approximately 3.75 miles west of the HCP Planning Area (CNDDB, 2013) (Figure 3-22). In addition, a known but potentially extirpated occurrence may overlap with the HCP Planning Area east of the Friant-Kern Canal (EONDX 22389). However, the accuracy of this mapped location is 1 mile, which means that this occurrence may not actually have been present within the HCP Planning Area.

Results of Habitat Conservation Plan Planning Area Surveys

Botanists did not observe San Joaquin Valley Orcutt grass in the HCP Planning Area during protocol-level botanical surveys during 2010 and 2011 (Quad Knopf, 2011b and 2011d). These surveys included all potential habitat for San Joaquin Valley Orcutt grass within the HCP Planning Area; however, no plants were observed in the HCP Planning Area during the survey periods.

3.2.2.3 SPINY-SEPALED BUTTON-CELERY (*ERYNGIUM SPINOSEPALUM*)

Status

The spiny-sepaled button-celery has neither Federal nor State listing. CDFW and the California Native Plant Society have assigned spiny-sepaled button-celery a California Rare Plant Rank of 1B.2 (rare, threatened, or endangered in California and elsewhere). The species was previously Federally listed as a Candidate Species, and a Federal recovery plan has been prepared for this species (USFWS, 2005).

Species Description

The spiny-sepaled button-celery is a herbaceous perennial with stout, branching, hairless stems 30–75 cm (11.8 to 29.5 inches) tall. The terrestrial leaves consist of a short petiole (less than 2 cm [0.8 inch] long) and a spiny-toothed or deeply-lobed blade 9–35 cm (3.5 to 13.8 inches) long. The flower heads are spherical or egg-shaped, 0.8 to 2 cm (0.3 to 0.8 inch) in diameter, and contain more than 10 flowers each. The narrow bracts are spiny on the margin and on the underside, and typically protrude beyond the flower heads. The individual flowers are tiny, with white petals and distinctive sepals. The fruits are oblong to egg-shaped and 2.5 to 3 millimeters (0.10 to 0.12 inches) long (Constance, 1993). The main identifying features of the spiny-sepaled button-celery are a lack of hairs, more than 10 flowers per head, stout main stems, and the short stems supporting the flower heads.

Habitat and Natural History

The spiny-sepaled button-celery is a perennial that flowers in April and May (Skinner and Pavlik, 1994). Its pollinators, seed dispersal agents, and population demographics are unknown. Because this species is a perennial, population sizes probably do not fluctuate drastically between years, except in response to major disturbances. The spiny-sepaled button-celery grows in both northern hardpan and northern claypan vernal pools from 330 to 840 feet above mean sea level (Sawyer and Keeler-Wolf, 1995), as well as in roadside ditches (Mason, 1957), depressions, and swales in annual grassland and oak woodlands (Twisselmann, 1967).

Distribution

The CNDDB (2013) currently includes 59 extant occurrences: 33 in Merced County, 14 in Tulare County, six in Fresno County, three in Madera County, two in Tuolumne County, and one in Calaveras County (Jepson, 1922; Hoover, 1937; CNDDB, 2013). Occurrences are known to occur at the CDFW Stone Corral Ecological Reserve near Sequoia Field and Yettem, approximately 2 miles west of the HCP Planning Area (CNDDB, 2013) (Figure 3-22). The CNDDB includes two occurrences in the HCP Planning Area (Figure 3-22), one of which overlaps with a portion of the HCP Planning Area. However, the accuracy of this mapped location is 1 mile, which means that this population may not actually be present within the HCP Planning Area. Nine populations of this species are known from the vicinity of the HCP Planning Area (CNDDB, 2013).

Results of Habitat Conservation Plan Planning Area Surveys

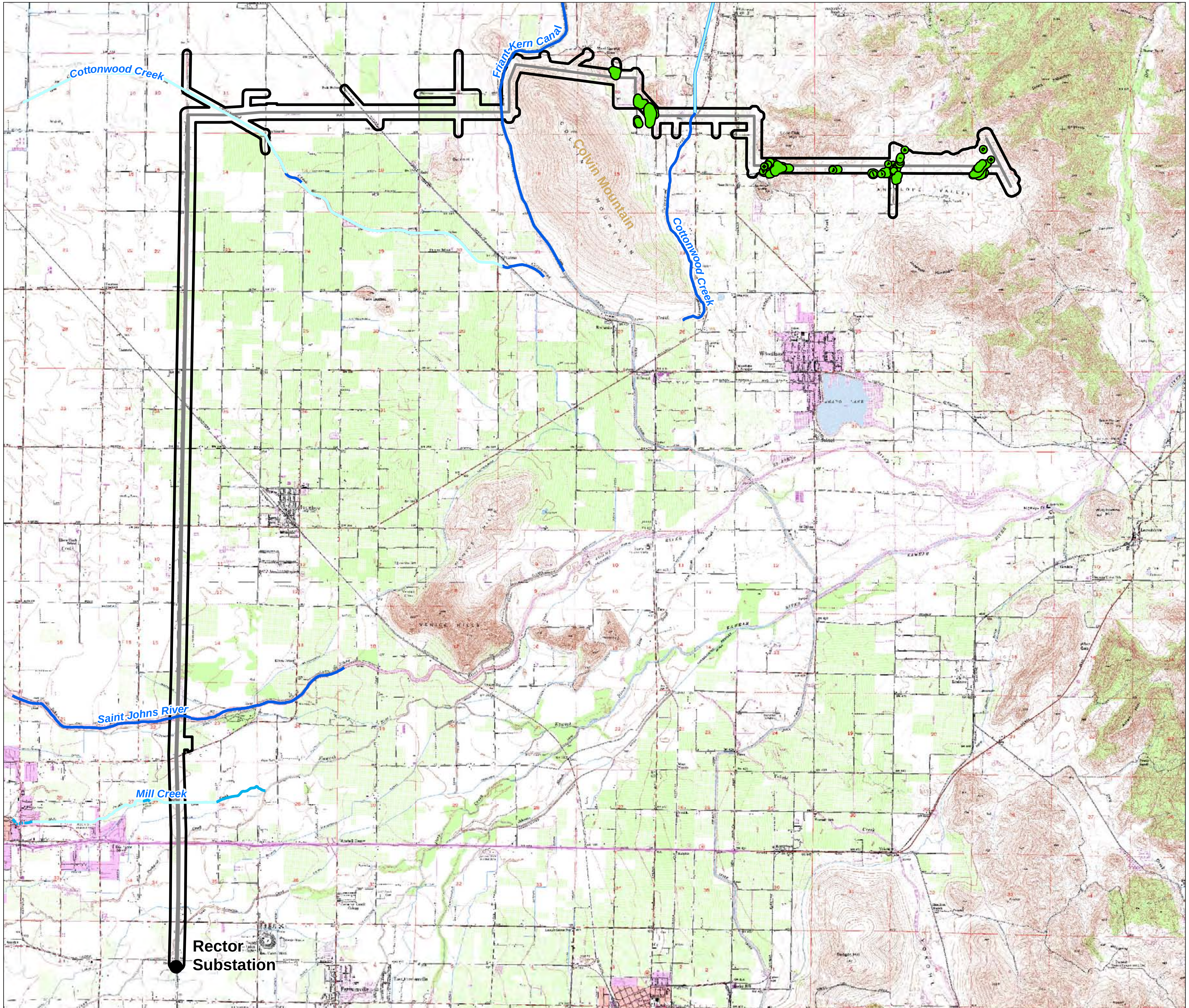
Fifty-eight new locations occupied by spiny-sepaled button-celery were found in the HCP Planning Area east of the Friant-Kern Canal, and encompassed 36.85 acres (Quad Knopf, 2011b). These occurrences can be viewed in Figure 3-23.

3.2.3 Summary of Covered Species Habitat in the Habitat Conservation Plan Planning Area

This section provides three tables summarizing the suitable habitat for Covered Species in the HCP Planning Area based on the HCP land cover types described in the preceding sections of this chapter.

Table 3-4 summarizes the land cover types providing suitable habitat for each species. Based on those relationships of species' suitable habitat to land cover, Table 3-5 summarizes the total amount of suitable habitat in the HCP Planning Area for each Covered Species.

Figure 3-23
Known Distribution of Spiny-Sepaled Button-Celery in the HCP Planning Area
Cross Valley Line



Cross Valley Line

HCP Planning Area

Special Status Plants

Spiny Sepaled Button Celery

NHD Stream Code

Artificial Path

Canal/Ditch

Connector

Stream/River: Intermittent

Stream/River: Perennial

Notes: Special Status Plants results are based on surveys conducted during 2010 - 2011. Due to the scale of the map, the distribution symbology is a graphic presentation of actual occurrence area.

N
W E
S

0 0.5 1 2
Miles

Source: ESRI 2010; SCE 2/26/2013; Quad Knopf 12/17/2011

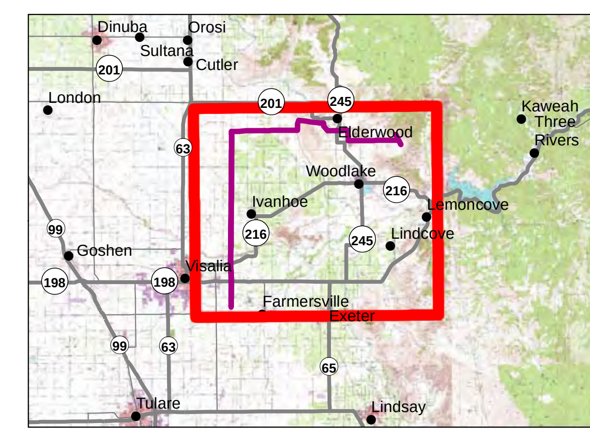


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Table 3-5
Suitable Habitat (Acres) for Covered Species in the Habitat Conservation Plan Planning Area

Species	West of FKC	East of FKC	Total
Vernal pool fairy shrimp	11.71	7.75	19.46
Vernal pool tadpole shrimp	11.00	7.60	18.60
Valley elderberry longhorn beetle (acres of elderberry shrub canopy)	7.29	1.01	8.30
California tiger salamander—aquatic larval	11.00	7.60	18.60
California tiger salamander—upland adult	1,655.86	1,205.55	2,861.42
Western spadefoot toad—aquatic larval	0.70	7.11	7.81
Western spadefoot toad—upland adult	70.25	978.44	1,048.69
Little willow flycatcher/Southwestern willow flycatcher	7.29	1.01	8.30
Least Bell's vireo	7.29	1.01	8.30
Western burrowing owl—foraging only (agricultural and seasonally dry land cover)	325.87	17.31	343.18
Western burrowing owl—foraging and reproduction (annual grassland)	70.25	978.43	1,048.69
San Joaquin kit fox—foraging and movement (agricultural and seasonally dry land cover)	1,627.99	239.70	1,867.69
San Joaquin kit fox—foraging, movement, and denning (grassland land cover only)	70.25	978.43	1,048.69
Hoover's spurge	0	6.97	6.97
San Joaquin Valley Orcutt grass	0	6.97	6.97
Spiny-sepaled button-celery	11.71	7.75	19.46

Key: FKC = Friant-Kern Canal

Source: Data compiled by AECOM in 2013 from Quad Knopf, 2010a, 2010b, and 2011a and ICF International, 2013

Based on the results of the surveys described previously, Table 3-6 provides the amounts of occupied habitat documented in the HCP Planning Area.

Table 3-6
Designated Critical Habitat (Acres) and Occupied Habitat for Covered Species in the Habitat Conservation Plan Planning Area

Species	West of FKC	East of FKC	Total
Vernal pool fairy shrimp (acres)	–	1.90	1.90
Vernal pool tadpole shrimp	–	–	–
Valley elderberry longhorn beetle (shrubs)	47	30	77
California tiger salamander—occupied aquatic larval (sites/acres)	–	4/1.89	4/1.89
California tiger salamander—upland adult (assumed occupied)	70	966	1,036
California tiger salamander—assumed aquatic larval (sites/acres)	4/7.14	19/1.18	22/8.32
Western spadefoot toad (acres)	7.11	8.89	16
Little willow flycatcher/Southwestern willow flycatcher (acres)	4.37	–	4.37
Least Bell's vireo	–	–	–
Western burrowing owl (count of occupied burrows)	–	10	10
Western burrowing owl—(assumed occupied)	191.29	548	739.29
San Joaquin kit fox	–	–	–
Critical habitat—Hoover's spurge (acres)[1]	1.13	860.69	861.82
Critical habitat—San Joaquin Valley Orcutt grass (acres)[1]	–	860.69	860.69
Spiny-sepaled button-celery (acres)	–	37.17	37.17

Key: FKC = Friant-Kern Canal

Note:

[1] No other critical habitat occurs within the HCP Planning Area.

Source: Data compiled by AECOM in 2013 from Quad Knopf, 2010a, 2010b, and 2011a and ICF International, 2013

4 IMPACT ASSESSMENT AND LEVEL OF TAKE

This chapter describes the direct and indirect effects on each Covered Species resulting from construction and operations and maintenance (O&M) Covered Activities and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor. SCE requests authorization from the U.S. Fish and Wildlife Service (USFWS) for take of wildlife Covered Species that may result from Covered Activities. For each Covered Species, this chapter provides estimates of the level of incidental take resulting from these direct and indirect effects.

4.1 DEFINITIONS

Several key terms are used in this analysis to distinguish differences in the timing, duration, and magnitude of effects; and the different forms of take. Those terms are defined below.

4.1.1 TIMING, DURATION, AND MAGNITUDE OF EFFECTS

Action means all activities authorized or funded in whole or in part by Federal agencies, including but not limited to actions intended to conserve listed species or their habitats; the granting of licenses, contracts, and permits; and actions directly or indirectly causing modifications to the land, water, or air (50 C.F.R. 402.02). In this document, the action is the issuance of an incidental take permit (ITP) and implementation of the habitat conservation plan (HCP) (which includes implementation of the HCP Covered Activities, implementation of the HCP Conservation Strategy, and implementation of the HCP Monitoring Plan and Adaptive Management Plan).

Effects of the action refers to the direct and indirect effects of an action on a species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that would add to the existing environmental baseline. The environmental baseline includes the past and present impacts of all Federal, State, and private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process.

Direct effects are those effects that are a direct result of an action that occurs at the same time and place (USFWS and NMFS, 1996).

Indirect effects are those effects that are caused by the action and are later in time, but are still reasonably certain to occur. (50 C.F.R. 402.02)

Insignificant effects relate to the size of the impact, and should never reach the scale where take occurs. **Discountable effects** are those extremely unlikely to occur. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur (USFWS, 1998).

Permanent effects are effects that persist after completion of a Covered Activity, and from which, habitats may not fully recover. This HCP defines effects on species' habitat that persist for more than 12 months to be permanent.

Temporary effects are effects that occur during and/or immediately following a Covered Activity, but diminish to insignificant levels as habitat recovers. This HCP defines effects on species' habitat that persist for 12 months or less to be temporary.

4.1.2 FORMS OF TAKE

Take under the Endangered Species Act (ESA) means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." (ESA Section 3[19]; 16 U.S.C. 1532[3][19])

Harm in the definition of "take" under the ESA means an act that actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. (50 C.F.R. 17.3)

Harass in the definition of "take" under the ESA means an intentional or negligent act or omission that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. (50 C.F.R. 17.3)

Adverse Modification is the direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species, including but not limited to alterations adversely modifying any of the primary constituent elements. (50 C.F.R. 402.02) Primary constituent elements referred to in this definition of adverse modification are the physical and biological features essential to the conservation of the species, including but not limited to: (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species. (50 C.F.R. 424.12)

4.2 APPROACH

This section describes how the effects of construction and O&M Covered Activities were assessed, and how the level of incidental take and the allowable impacts on Covered Species and their habitats under the proposed ITP were determined. The results of the assessment are presented in the following section (Section 4.3, Effects on Covered Species).

For each Covered Species, the direct and indirect effects of construction and O&M Covered Activities were assessed for both habitat (suitable and occupied) and harassment or harm of individuals. This assessment is based on the description of Covered Activities provided in Chapter 2, Covered Activities, and the description of the environmental baseline for Covered Species in the HCP Planning Area provided in Chapter 3, Environmental Setting/Biological Resources.

For each Covered Species, the assessment of direct and indirect effects resulting from construction and O&M Covered Activities consisted of the following steps:

- Quantifying total acreage affected by each land disturbance category
- Quantifying direct effects on land cover

- Quantifying direct effects on Covered Species habitats
- Quantifying potential indirect effects on Covered Species habitat
- Determining the duration of effects on Covered Species and their habitats (i.e., temporary or permanent effects)
- Reviewing each Covered Activity and identifying the mechanisms by which harm or harassment of individuals could occur (directly and indirectly)
- Evaluating the likelihood and magnitude of harm and harassment from each effect mechanism, taking into consideration the measures that this HCP would implement to avoid or minimize these effects

These steps are detailed in the following subsections.

4.2.1 Quantifying Total Acreage Affected by Each Land Disturbance Category

As described in Chapter 2, this HCP refers to three land disturbance categories: facility footprints, high disturbance work areas, and low disturbance work areas. The land disturbance categories are defined in Section 2.1, Definitions. To quantify the total acreage affected by each land disturbance category (and to facilitate quantification of direct and indirect effects on land cover types and Covered Species habitats), a Disturbance Area Map was created using a Geographic Information System (GIS)–based system. The Disturbance Area Map was created by assigning all areas identified in the final plans for the Cross Valley Line into one of the three land disturbance categories. Table 2-1 identifies each type of facility footprint, high disturbance work area, and low disturbance work area associated with construction Covered Activities. As noted in Chapter 2, facility footprints, high disturbance work areas, and low disturbance work areas sometimes overlap spatially. To account for this overlap and prevent "double counting" of disturbed acres, "rules of priority" were used during development of the Disturbance Area Map. The "rules of priority" were based on the disturbance intensity of each land disturbance category. The following parameters were used to rank land disturbance categories by disturbance intensity:

- Facility footprints were considered the most intensive land disturbance category (i.e., more intensive than both high disturbance work areas and low disturbance work areas). Facility footprints would be graded and maintained clear of vegetation for the term of the ITP (see Section 2.1, Definitions).
- High disturbance work areas were considered less intensive than facility footprints but more intensive than low disturbance work areas. High disturbance work areas would be graded, compacted, and revegetated after use (see Section 2.1, Definitions).
- Low disturbance work areas were considered the least intensive land disturbance category (i.e., less intensive than both facility footprints and high disturbance work areas). Low disturbance work areas would not be graded or compacted, and would be revegetated (see Section 2.1, Definitions).

Using these parameters to develop the Disturbance Area Map, acres of overlap between multiple land disturbance categories were assigned to the more intensive land disturbance category. For example, where the facility footprint of a new access road overlapped with low disturbance work areas (e.g., a structure work area), acreage in the overlap area were assigned to the total for the facility footprint of access roads and not to the total of low disturbance work areas. Table 2-1 provides the total acreage of land disturbance for each land disturbance category for construction Covered Activities.

Total land disturbance for Class 2 O&M Covered Activities[1] was determined using assumptions of the area needed to complete each activity and the number of times the Class 2 O&M Covered Activity would be implemented during the ITP term. (See Chapter 2, Sections 2.3.7 to 2.3.16, for assumptions regarding area needed to complete each O&M Covered Activity and the frequency these activities would occur during the ITP term.) Table 2-3 provides the total acreage of land disturbance that would result from all occurrences of each type of Class 2 O&M Covered Activity. O&M Covered Activities would occur over the 30-year ITP term, after implementation of construction Covered Activities. Therefore, each occurrence of a Class 2 O&M Covered Activity results in additional land disturbance, and the total land disturbance resulting from a Class 2 O&M Covered Activity is the sum of the disturbances resulting from each occurrence. Land disturbance resulting from O&M Covered Activities (see Table 2-3) is in addition to land disturbance resulting from construction Covered Activities (see Table 2-1).

Nearly all land disturbance acreage presented in Table 2-3 would occur in low disturbance work areas. Generally, land disturbance acreages were not calculated for O&M Covered Activities occurring within facility footprints and high disturbance work areas because the HCP assumes that topography and soils in these areas would be substantially modified, and, in the case of facility footprints, areas would support installed structures and would be maintained clear of vegetation. Therefore, O&M Covered Activities occurring within facility footprints and high disturbance work areas are not expected to result in additional effects (i.e., effects in addition to those resulting from construction Covered Activities) to suitable habitat for HCP Covered Species. The exception to this is maintenance and replacement of the road drainage system and stormwater diversion structure (see Section 2.3.13), which includes the installation of additional road drainage system and stormwater diversion structures (e.g., MacDrains) that would be installed outside the road's initial facility footprint, to slightly expand the final facility footprint of access roads by a maximum of 0.08 acre over the ITP term (see Table 2-3).

4.2.2 Quantifying Direct Effects on Land Cover

The quantification of direct effects on land cover was completed using different methods for construction and Class 2 O&M Covered Activities. The following subsections provide a summary of the methods and results of estimating direct effects on land cover mapped within the HCP Planning Area. Direct effects on land cover resulting from both construction and O&M Covered Activities are summarized in Table 4-1.

4.2.2.1 Quantifying Direct Effects of Construction Covered Activities on Land Cover

Direct effects on land cover resulting from construction Covered Activities were quantified using a GIS-based analysis that intersected the Disturbance Area Map (see Section 4.2.1) with land cover maps for the HCP Planning Area (see Figures 3-4 and 3-5). This analysis summed the total acreages of each land cover type overlapping each land disturbance category composing the Disturbance Area Map. Table 4-1 provides the total acreage per land

[1] Class 1 O&M Covered Activities would be conducted entirely within the drivable surface of access roads or within tubular steel pole (TSP) and lattice steel tower (LST) structure pads, or would be implemented from aircraft, and therefore, would not disturb plants or the soil surface of natural land cover types (see Section 2.3). Thus, land disturbance for Class 1 O&M Covered Activities was not calculated.

Table 4-1
Direct Effects on Land Cover Types Resulting from Construction and Operations and Maintenance Covered Activities

Land Cover Type	Acreage of Direct Effects Resulting from Construction Covered Activities (acres east of FKC[1] in parentheses)[2]				Acreage of Direct Effects Resulting from O&M Covered Activities (acres east of FKC[1] in parentheses)[2]	Total Acreage of Direct Effects Resulting from Construction and O&M Covered Activities per Land Cover Type
	Facility footprint (graded and maintained clear of vegetation)	High disturbance work area (graded, compacted, and revegetated)	Low Disturbance work area (not graded, not compacted, and revegetated)	Total Acreage of Direct Effects Resulting from Construction Covered Activities per Land Cover Type	Low Disturbance work area (not graded, not compacted, and revegetated)	
Developed	0.35 (0.11)	- (–)	9.99 (0.10)	**10.34 (0.21)**	2.24 (0.05)	**12.58 (0.26)**
Agricultural—Orchard	8.11 (4.14	- (–)	41.52 (5.85)	**49.62 (9.98)**	11.10 (3.19)	**60.72 (13.17)**
Agricultural—vineyard	1.21 (–)	- (–)	4.29 (0.11)	**5.51 (0.11)**	0.99 (0.06)	**6.50 (0.17)**
Agricultural—row/field crop	2.33 (1.15)	- (–)	9.26 (2.44)	**11.59 (3.58)**	2.84 (1.33)	**14.43 (4.91)**
Annual grassland	30.02 (30.02)	10.94 (10.94)	34.78 (30.53)	**75.74 (71.49)**	17.62 (16.68)	**93.36 (88.17)**
Vernal pool/swale	0.14 (0.14)	- (–)	0.14 (0.14)	**0.28 (0.28)**	0.08 (0.08)	**0.36 (0.36)**
Puddle	0.01 (0.006)	0.003 (0.003)	0.02 (0.01)	**0.04 (0.02)**	0.01 (<0.01)	**0.05 (0.02)**
Basin/stock pond	- (–)	- (–)	- (–)	**- (–)**	- (–)	**- (–)**
Riparian	- (–)	- (–)	- (–)	**- (–)**	- (–)	**- (–)**
Riverine	- (–)	- (–)	- (–)	**- (–)**	- (–)	**- (–)**
Lined canal	- (–)	- (–)	- (–)	**- (–)**	- (–)	**- (–)**

Table 4-1
Direct Effects on Land Cover Types Resulting from Construction and Operations and Maintenance Covered Activities

Land Cover Type	Acreage of Direct Effects Resulting from Construction Covered Activities (acres east of FKC[1] in parentheses)[2]				Acreage of Direct Effects Resulting from O&M Covered Activities (acres east of FKC[1] in parentheses)[2]	Total Acreage of Direct Effects Resulting from Construction and O&M Covered Activities per Land Cover Type
	Facility footprint (graded and maintained clear of vegetation)	High disturbance work area (graded, compacted, and revegetated)	Low Disturbance work area (not graded, not compacted, and revegetated)	Total Acreage of Direct Effects Resulting from Construction Covered Activities per Land Cover Type	Low Disturbance work area (not graded, not compacted, and revegetated)	
Ditch	0.11 (0.11)	0.06 (0.06)	0.24 (0.08)	**0.41 (0.25)**	0.08 (0.04)	**0.49 (0.29)**
Total Acreage of Direct Effects per Land Disturbance Category	**42.29 (35.68)**	**11.00 (11.00)**	**100.24 (39.24)**	**153.52 (85.91)**	**34.96 (21.44)**	**188.48 (107.35)**

Notes:

1 FKC = Friant-Kern Canal

2 Acreages do not total exactly because of round-off error.

Source: Data compiled by AECOM in 2013 from data provided by SCE in 2013 disturbance category that resulted from this GIS-based analysis. Of the total 3,385 acres in the HCP Planning Area, approximately 153.52 acres would be directly affected by construction Covered Activities, with over half of that disturbance (86 acres) occurring east of the Friant-Kern Canal. Most land disturbance would occur in the agricultural land cover types (66.72 acres) and in the annual grassland land cover type (75.74 acres). Most of the annual grassland effects (71.49 acres) would occur east of the Friant-Kern Canal (Table 4-1).

4.2.2.2 Quantifying Direct Effects of Class 2 Operations and Maintenance Covered Activities on Land Cover

The exact locations of some individual Class 2 O&M Covered Activities cannot be determined at this time. Therefore, direct effects on land cover resulting from Class 2 O&M Covered Activities were estimated by assuming that these activities would be uniformly distributed among land cover types in areas potentially affected by implementation of Class 2 O&M Covered Activities. With the exception of additional off-road travel routes (see Sections 2.3.10, 2.3.11, and 2.3.15) and new locations of drainage systems and stormwater diversion structures (see Section 2.3.13), all Class 2 O&M Covered Activities would occur in areas affected during construction Covered Activities (i.e., facility footprints, high disturbance work areas, and low disturbance work areas; see Appendix B). As discussed in Section 4.2.1, land disturbance is not expected to occur for O&M Covered Activities occurring within facility footprints and high disturbance work areas because the HCP assumes that topography and soils in these areas would be substantially modified, and that, in the case of facility footprints, areas would support installed structures and would be maintained clear of vegetation. Therefore, direct effects of Class 2 O&M Covered Activities to land cover were calculated only for low disturbance work area.

To calculate direct effects on land cover types resulting from Class 2 O&M Covered Activities, the acreage of each land cover type occurring within low disturbance facility footprints was first totaled. A relative proportion was then calculated for each land cover type by dividing the total acreage for each land cover type occurring within low disturbance work areas by the total acreage of low disturbance work areas (i.e., 100.25 acres; see Table 2-1). As noted above, this HCP assumes that implementation of O&M Covered Activities would be uniformly distributed among all land cover types given that the exact locations of these activities cannot be determined at this time. Thus, the total acreage of direct effects on a given land cover type resulting from O&M Covered Activities was calculated by multiplying the total acreage of that land cover type occurring within low disturbance work areas by the relative proportion calculated for the land cover type. For example, if one-third of the total land cover occurring within low disturbance work areas were annual grasslands, then the total annual grassland occurring within low disturbance work areas would be multiplied by one-third to estimate the acreage of direct effects on this land cover type resulting from O&M Covered Activities. Table 4-1 provides the total direct effects on each land cover type resulting from O&M Covered Activities.

4.2.3 Quantifying Direct Effects on Covered Species Habitat

The quantification of direct effects on suitable Covered Species habitat was completed using direct effects on land cover types resulting from construction and O&M Covered Activities (see Section 4.2.2; see Table 4-1). For each Covered Species, the direct effects on land cover types that provide suitable habitat for the species were summed to generate total acres of suitable habitat directly affected by construction and O&M Covered Activities (see Table 3-4 for list of land cover types that provide suitable habitat for each Covered Species). Direct effects on suitable Covered Species habitat from both construction and O&M Covered Activities are summarized in

Table 4-2. The total direct effects provided in Table 4-2 for each Covered Species resulting from both construction and O&M Covered Activities represent the total amount of take requested under this HCP.

The direct effects of construction Covered Activities on habitat known to be occupied by Covered Species were also estimated. Chapter 3 describes the documented distribution of occupied habitat in the HCP Planning Area. To estimate the amount of this occupied habitat affected by Covered Activities, a GIS-based analysis was used that intersected each map of species occupied habitat with the Disturbance Area Map. Chapter 3 presents maps of suitable habitat known to be occupied by each Covered Species based on CNDDB occurrence data and species survey results (see Figures 3-7 through 3-10, 3-12 through 3-20, and 3-23 through 3-24). Not all species are known to occupy habitat within the HCP Planning Area; therefore, direct effects on occupied Covered Species habitat was calculated only for those species known to occur within the HCP Planning areas. Occupied Covered Species habitat is generally a subset of the total suitable habitat that occurs within the HCP Planning Area (i.e., occurs within suitable habitat). Direct effects on occupied Covered Species habitat resulting from construction Covered Activities are provided in species-specific discussions (when applicable) in Section 4.3, Effects on Covered Species.

However, the amount of occupied habitat that would exist in low disturbance work areas at the time of O&M Covered Activities over the ITP term is not known. The potential for a Covered Species to remain in occupied habitat over the 30-year ITP term would be affected by the habitat's sensitivity to construction-related disturbances, the species biology and behaviors, the mobility of a Covered Species, and the cumulative effects of other future actions affecting the species' future distribution and abundance in the HCP Planning Area, and natural stochastic events including disease or severe weather. Regardless, as discussed in subsequent sections of this impact analysis, avoidance and minimization measures (AMMs) implemented in conjunction with O&M Covered Activities would avoid or minimize effects of O&M activities on occupied and suitable Covered Species habitat. The HCP effects analysis assumes that O&M AMMs (see Table 2-3) would generally be effective, because most O&M Covered Activities would not involve grading, would cause relatively minor land disturbance, would use work areas whose boundaries can be adjusted to avoid known occupied or suitable Covered Species habitat, and because O&M Covered Activities generally would be not be performed under emergency conditions that may preclude implementation of some O&M AMMs. The potential for each O&M Covered Activity to modify or degrade occupied Covered Species habitat was evaluated on a species-by-species basis, and is discussed in Section 4.3, Effects on Covered Species.

4.2.4 QUANTIFYING POTENTIAL INDIRECT EFFECTS ON COVERED SPECIES HABITAT

Construction and O&M Covered Activities could result in indirect effects on Covered Species habitat through several mechanisms, including long-term alteration of the existing hydrologic regime (from changes in surface or subsurface hydrologic connectivity); increased erosion and sedimentation; new barriers to species movement; isolation of suitable habitat; removal of prey species; degradation or modification of prey species habitats; facilitation of the establishment and spread of invasive species; increased potential of fire; and facilitation of access or additional habitat disturbance by others. For each Covered Species, mechanisms by which construction and O&M Covered Activities could cause indirect effects on suitable Covered Species habitat were identified, and measures to avoid and minimize each indirect impact mechanism are presented in Tables 2-2 and 2-4. The HCP assesses the effectiveness of each AMM and the effectiveness of HCP conservation measures on each Covered Species in Section 4.3, Effects on Covered Species.

Table 4-2
Acres of Species Suitable Habitat Directly Affected by Construction and Operations and Maintenance Covered Activities

	Acreage of Direct Effects Resulting from Construction Covered Activities (acres east of FKC[1] in parentheses)[2]				Acreage of Direct Effects Resulting from O&M Covered Activities (acres east of FKC[1] in parentheses)[2]	Total Acreage of Direct Effects Resulting from Construction and O&M Covered Activities per Covered Species[3]
Covered Species—Habitat Type	**Facility footprint (graded and maintained clear of vegetation)**	**High disturbance work area (graded, compacted, and revegetated)**	**Low Disturbance work area (not graded, not compacted, and revegetated)**	**Total Acreage of Direct Effects Resulting from Construction Covered Activities per Covered Species**	**Low Disturbance work area (not graded, not compacted, and revegetated)**	
Vernal pool fairy shrimp	0.15 (0.15)	0.003 (0.003)	0.16 (0.15)	**0.32 (0.30)**	0.09 (0.09)	**0.41 (0.39)**
Vernal pool tadpole shrimp	0.14 (0.14)	– (–)	0.14 (0.14)	**0.28** (0.28)	0.08 (00.08)	**0.0.36** (0.36)
Valley elderberry longhorn beetle (number of elderberry shrubs with stems >1 inch)	6 shrubs; 50 stems (6 shrubs; 50 stems)	– (–)		**6 shrubs; 50 stems (6 shrubs; 50 stems)**	11 shrubs; 100 stems (11 shrubs; 100 stems)	**17 shrubs; 150 stems (17 shrubs; 150 stems)**
California tiger salamander—aquatic larval	0.14 (0.14)	– (–)	0.14 (0.14)	**0.28 (0.28)**	0.08 (0.08)	**0.36 (0.36)**
California tiger salamander—upland adult aestivation, foraging (annual grassland)	30.02 (30.02)	10.94 (10.94)	34.78 (30.53)	**75.74 (71.49)**	17.62 (16.68)	**93.36 (88.17)**
California tiger salamander—upland adult movement only (agricultural land cover)	11.65 (5.28)	– (–)	55.07 (8.39)	**66.72 (13.67)**	14.93 (4.58)	**81.65 (18.25)**
Western spadefoot toad—aquatic larval	0.15 (0.15)	0.003 (0.003)	0.16 (0.15)	**0.32 (0.30)**	0.09 (0.09)	**0.41 (0.39)**
Western spadefoot toad—upland adult	30.02 (30.02)	10.94 (10.94)	34.78 (30.53)	**75.74 (71.49)**	17.62 (16.68)	**93.36 (88.17)**
Burrowing owl—foraging only (row/field crop and seasonally dry land cover)	2.33 (1.15)	– (–)	9.26 (2.44)	**11.59 (3.58)**	2.84 (1.33)	**14.43 (4.91)**

Table 4-2
Acres of Species Suitable Habitat Directly Affected by Construction and Operations and Maintenance Covered Activities

Covered Species—Habitat Type	Acreage of Direct Effects Resulting from Construction Covered Activities (acres east of FKC[1] in parentheses)[2]				Acreage of Direct Effects Resulting from O&M Covered Activities (acres east of FKC[1] in parentheses)[2]	Total Acreage of Direct Effects Resulting from Construction and O&M Covered Activities per Covered Species[3]
	Facility footprint (graded and maintained clear of vegetation)	High disturbance work area (graded, compacted, and revegetated)	Low Disturbance work area (not graded, not compacted, and revegetated)	Total Acreage of Direct Effects Resulting from Construction Covered Activities per Covered Species	Low Disturbance work area (not graded, not compacted, and revegetated)	
Burrowing owl—foraging and reproduction (annual grassland)	30.02 (30.02)	10.94 (10.94)	34.78 (30.53)	**75.74 (71.49)**	17.62 (16.68)	**93.36 (88.17)**
Southwestern willow flycatcher/little flycatcher[4]	– (–)	– (–)	– (–)	– (–)	– (–)	– (–)
Least Bell's vireo[4]	– (–)	– (–)	– (–)	– (–)	– (–)	– (–)
San Joaquin kit fox—foraging and movement (agricultural and seasonally dry land cover)	11.65 (5.28)	– (–)	55.07 (8.39)	**66.72 (13.67)**	14.93 (4.58)	**81.65 (18.25)**
San Joaquin kit fox—foraging, movement, and denning (grassland land cover only)	30.02 (30.02)	10.94 (10.94)	34.78 (30.53)	**75.74 (71.49)**	17.62 (16.68)	**93.36 (88.17)**
Spiny-sepaled button-celery	0.84 (0.84)	0.36 (0.36)	0.80 (0.80)	**2.00 (2.00)**	0.08 (0.08)	**2.08 (2.08)**
Hoover's spurge—vernal pools/ swales in designated critical habitat	0.14 (0.14)	– (–)	0.14 (0.14)	**0.28 (0.28)**	0.08 (0.08)	**0.36 (0.36)**
Hoover's spurge—associated annual grassland in designated critical habitat	7.69 (7.69)	– (–)	6.07 (6.07)	**13.76 (13.76)**	3.32 (3.32)	**17.08 (17.08)**
San Joaquin Valley Orcutt grass–vernal pools/swales in designated critical habitat	0.14 (0.14)	– (–)	0.14 (0.14)	**0.28 (0.28)**	0.08 (0.08)	**0.36 (0.36)**

Table 4-2
Acres of Species Suitable Habitat Directly Affected by Construction and Operations and Maintenance Covered Activities

Covered Species—Habitat Type	Acreage of Direct Effects Resulting from Construction Covered Activities (acres east of FKC[1] in parentheses)[2]				Acreage of Direct Effects Resulting from O&M Covered Activities (acres east of FKC[1] in parentheses)[2]	Total Acreage of Direct Effects Resulting from Construction and O&M Covered Activities per Covered Species[3]
	Facility footprint (graded and maintained clear of vegetation)	High disturbance work area (graded, compacted, and revegetated)	Low Disturbance work area (not graded, not compacted, and revegetated)	Total Acreage of Direct Effects Resulting from Construction Covered Activities per Covered Species	Low Disturbance work area (not graded, not compacted, and revegetated)	
San Joaquin Valley Orcutt grass–associated annual grassland in designated critical habitat	7.69 (7.69)	– (–)	6.07 (6.07)	**13.76** **(13.76)**	3.32 (3.32)	**17.08** **(17.08)**

Notes:
[1] FKC = Friant-Kern Canal
[2] Acreages do not total exactly because of round off error.
[3] The total acreage of direct effects resulting from both construction and O&M Covered Activities represent the total amount of take requested for each Covered Species under this HCP.
[4] Although Covered Activities would not result in the removal of any riparian habitat, temporary Covered Activities have the potential to cause harassment of nesting birds.
Source: Data compiled by AECOM in 2013 from data provided by SCE in 2013

In general, indirect effects originate in areas that have become substantially altered after the implementation of construction Covered Activities. For the purposes of this HCP, indirect effects are expected to originate from facility footprints and high disturbance work areas given that these areas would be substantially altered during implementation of Covered Activities. The potential for indirect effects on Covered Species habitat is expected to diminish with distance from these substantially altered areas. Therefore, to estimate indirect effects resulting from construction Covered Activities, the amount of Covered Species habitat within 250 feet of facility footprints or high disturbance work areas was quantified. The distance of 250 feet was used because of its previous use in estimates of indirect effects on vernal pool hydrologic regimes and in vernal pool minimization measures: a distance of 250 feet has been used as the zone adjacent to development within which the majority of indirect effects on vernal pool hydrology are assumed to occur, based on assumptions used in USFWS's 1996 programmatic consultation with the U.S. Army Corps of Engineers for small impacts on vernal pool habitat (USFWS and NMFS, 1996). This distance related to vernal pool effects was used as a maximum extent for indirect effects on the existing hydrologic conditions of all species habitats, because vernal pools are the most sensitive of the land cover types providing habitat for Covered Species, and alteration of hydrologic regime is an indirect effect mechanism that is not eliminated by AMMs.

Table 4-3 provides the acreages of indirect effects on each land cover type expected to occur as a result of construction Covered Activities. These acreages were generated using a GIS-based analysis that calculated the total acreage of each land cover type within the 250-foot zone around facility footprints and high disturbance work areas. Acreages presented in Table 4-3 were used to generate indirect effects on suitable and occupied habitat for each Covered Species. Indirect effects on suitable Covered Species are discussed for each species in Section 4.3, Effects on Covered Species. Indirect effects on suitable Covered Species habitat were extrapolated based on indirect effects on land cover types that provide suitable habitat for the species (see Table 3-4 for list of land cover types that provide suitable habitat for each Covered Species). Where occupied Covered Species habitat was determined to be present within the HCP Planning Area, a similar GIS-based analysis was performed to calculate the total acreage of occupied Covered Species habitat within the 250-foot zone around facility footprints and high disturbance work areas. Potential indirect effects on occupied Covered Species habitat are provided for relevant species (i.e., Covered Species determined to have occupied habitat within the HCP Planning Area) in Section 4.3, Effects on Covered Species.

O&M Covered Activities are not expected to result in indirect effects on Covered Species habitat additional to those caused by construction Covered Activities. With the exception of installing new drainage systems and stormwater diversion structures on existing access roads (see Section 2.3.13), O&M Covered Activities would not result in new land cover conversion or new long-term modification or degradation of land cover attributes (e.g., soil condition) that could indirectly modify or degrade land cover. Also, with the exception of portions of several off-road travel routes, O&M Covered Activities would be implemented in facility footprints or in high disturbance work areas. Therefore, no additional indirect effects where identified for Covered Species habitat for O&M Covered Activities. Other forms of species take (injury/mortality to individuals, and harassment of individuals) caused by implementing each O&M Covered Activity are analyzed in Section 4.3, Effects on Covered Species.

Table 4-3 Indirect Effects on Land Cover Types Resulting from Construction Covered Activities1			
Land Cover Type	Acreage of Indirect Effects[2]		Total Acreage of Indirect Effects[2]
	East of FKC[3]	West of FKC[3]	
Developed	17.19	8.18	25.36
Agricultural—orchard	79.80	95.95	175.75
Agricultural—vineyard	-	37.45	37.45
Agricultural—row/field crop	1.66	37.45	39.11
Annual grassland	456.28	-	456.28
Vernal pool/swale	3.56	-	3.56
Puddle	0.10	0.03	0.13
Basin/stock pond	0.06	0.96	1.02
Riparian	0.10	0.23	0.32
Riverine	2.75	-	2.75
Lined canal	-	-	-
Ditch	2.07	1.76	3.83
Total Indirect Effects on Land Cover Types			**730.50**

Notes:

[1] Indirect effects were quantified only for facility footprints and high disturbance work areas. See Section 4.2.4 for discussion of how indirect effects were quantified.

[2] Acreages do not total exactly because of round off error.

[3] FKC = Friant-Kern Canal

Source: Data compiled by AECOM in 2013 from data provided by SCE in 2013; Quad Knopf, 2010a, 2010b, and 2011a; ICF 2013

4.2.5 DETERMINING THE DURATION OF EFFECTS ON COVERED SPECIES HABITAT

The duration of effects (i.e., temporary or permanent) on Covered Species habitat was determined based primarily on three factors:

- **Land Cover Conversion.** Acres permanently modified or converted from a land cover type providing suitable Covered Species habitat to a land cover type that does not provide the same quality or amount of habitat for Covered Species is assumed to cause a permanent loss of Covered Species habitat.

- **Land Cover Resilience.** The ability for land cover types to recover from disturbance differs with the nature and magnitude of the disturbance, with the ecology of land cover types, and the breeding, feeding, and sheltering habitat requirements of Covered Species.

- **Sensitivity of Habitat Use.** The sensitivity of a Covered Species' use of its habitats after persistent alterations resulting from Covered Activities would vary with the type of habitat (e.g., foraging, movement, and sheltering habitat versus breeding/ reproduction habitats) and would vary with the biology of that Covered Species.

As discussed in Section 2.1, all facility footprints would be constructed by blasting, grading, and compacting soil; would be occupied by permanent structures (i.e., TSPs, LSTs, and access roads); and would be maintained clear of vegetation. Thus, the conversion of land cover to a facility footprint is a permanent effect for all land cover types. In this analysis, this conversion is considered a permanent loss of the suitable Covered Species habitat that had been present in the facility footprint before implementation of the construction Covered Activities.

High disturbance work areas (i.e., crane pads and pull-tensioning-splicing work areas in natural land cover types; see Section 2.1) are also assumed to result in permanent effects on suitable Covered Species habitat. Although these areas would be revegetated after use, it is anticipated that an extended duration (i.e., greater than 1 year) would be required for suitable Covered Species habitat within high disturbance work areas to recover, and thus these effects are considered permanent.

Low disturbance work areas (see Section 2.1) are assumed to result in temporary effects on suitable Covered Species habitat. These areas would generally not be graded or compacted and suitable Covered Species habitat is expected to recover within one season (12 months). One type of low disturbance work area would be subject to grading: pulling-tensioning-splicing work areas in agricultural land cover types. This HCP assumes that land disturbance resulting from preparation and use of pulling-tensioning-splicing work areas in agricultural land cover types is comparable to ongoing land use disturbances that frequently occur in agricultural land cover types, and thus would not modify or degrade species habitat in those land cover types for longer than one season (12 months).

The HCP assumes that where some attributes of land cover are permanently altered by Covered Activities, habitat use by Covered Species may be altered or eliminated. However, alteration of a land cover's attributes does not necessarily eliminate all habitat values for each Covered Species. Sensitivity of land cover use varies among Covered Species and type of habitat provided by that land cover type (e.g., reproduction habitat versus foraging habitat) (see Table 3-4). Thus, effects of land disturbance on each Covered Species are evaluated separately in Section 4.3, Effects on Covered Species.

4.2.6 Identifying Mechanisms Causing Harassment and Harm of Individuals

Based on the description of Covered Activities in Chapter 2, Covered Activities, and the description of baseline conditions and Covered Species ecology in Chapter 3, Environmental Setting/Biological Resources, the potential mechanisms of direct and indirect harm (injury and mortality) and harassment were identified. These mechanisms were identified separately for each Covered Species based on its ecology, and are described in Section 4.3, Effects on Covered Species.

4.2.7 Evaluating Likelihood and Magnitude of Harassment of Harm of Individuals

The likelihood and magnitude of harassment and injury/mortality (harm) to individuals was assessed for each Covered Activity's potential effect-mechanism. This assessment also considered the effectiveness of each AMM in Tables 2-2 and 2-4, and 5-14, and in the mitigation and conservation measures included in this HCP's conservation strategy (which is described in Chapter 5, Conservation Strategy). This assessment was done separately for each covered species based on its ecology. The results of these assessments are provided in Section 4.3, Effects on Covered Species.

4.3 EFFECTS ON COVERED SPECIES

This section provides an assessment of the direct and indirect effects of construction and O&M Covered Activities on suitable habitat and individuals of each Covered Species.

4.3.1 WILDLIFE COVERED SPECIES

4.3.1.1 VERNAL POOL FAIRY SHRIMP

Introduction

During protocol branchiopod surveys conducted in 2010–2011 and 2011–2012, vernal pool fairy shrimp (VPFS) were detected in 1.90 acres of vernal pools and puddles in the HCP Planning Area east of the Friant-Kern Canal (see Figure 3-8 and Table 3-3). In addition to this occupied habitat, the HCP Planning Area contains other suitable habitat for this species in the form of vernal pools/swales, puddles, and stock ponds/basins, located both east and west of the Friant-Kern Canal (see Section 3.2.1.1, Figure 3-7). All of this suitable habitat is presumed to be occupied by VPFS and, therefore, is considered in this VPFS effects analysis.

The HCP Planning area contains a total of 19.46 acres of land cover that provide suitable habitat for VPFS, including almost 7 acres of vernal pools/swales, 11.6 acres of stock ponds/basins, and less than 1 acre of puddles (see Tables 3-2, 3-4, and 3-5). Because the vernal pool fairy shrimp is an obligate vernal pool species with specific habitat requirements for its lifecycle, it is vulnerable to harassment, harm, or mortality from ground-disturbing construction and O&M Covered Activities that modify or degrade occupied habitat.

Although facilities have been sited to avoid suitable habitat for VPFS wherever feasible, approximately 0.15 acre of suitable habitat for VPFS would be permanently and directly affected by construction Covered Activities (Table 4-4). Where VPFS suitable habitat occurs in facility footprints and the graded work areas, the Covered Activities would fill all or part of the features that are suitable VPFS habitat or alter topography that can permanently disturb the underlying impermeable soil layer of this land cover type. This would, in effect, eliminate this VPFS suitable habitat and permanently convert it to nonhabitat.

In contrast to graded work areas, the HCP assumes that Covered Activities occurring in nongraded work areas would disturb but not permanently eliminate suitable VPFS habitat. The HCP assumes that temporary laydown of vegetation and disturbance of the soil surface in the nongraded work areas would not kill VPFS cysts, and would not alter the later inundation of vernal pools/swales, basins/stock ponds, or puddles (i.e., a pool's hydrologic regime of water filling, water depth, and days with water) or reduce their suitability as VPFS habitat in subsequent years. Therefore, construction and O&M Covered Activities occurring in nongraded work areas are considered to result in a total of temporary disturbance to 0.25 acre of VPFS suitable habitat, as the VPFS cysts would persist and the suitable habitat recovers to preproject conditions after the Covered Activity is completed (Table 4-4).

In addition to affecting suitable VPFS habitat within facility footprints, graded work areas, and ungraded work areas, the HCP assumes that construction Covered Activities could modify or degrade adjacent upland habitat through several mechanisms. As discussed below, most of these upland effects are avoided or reduced by AMMs that are part of the Covered Activities (Tables 2-2 and 2-4) and additional AMMs that are part of the Conservation Strategy (Table 5-14). However, the HCP assumes that grading within the watersheds of vernal pools/swales can alter and indirectly modify or degrade their hydrology. The HCP assumes that the hydrologic regime of puddles, stock ponds, and basins would similarly be affected. Vernal pools/swales, puddles, and basins/stock ponds within 250 feet of facility footprints or graded work areas can be indirectly affected through hydrological modification. This minimum 250-foot width is the zone around development where changes to the existing surface and subsurface hydrological connections are expected, resulting in changes to the "hydrologic regime" of vernal pools (and other aquatic features) located in the same landscape. This distance is consistent with the distance from paved roadways that a number of ecological effects may extend in a range of vegetation types (Forman and Alexander, 1998). Although the access road drainage systems and stormwater diversion structures (see Section 2.2.2.2) are expected to reduce some of these hydrological effects, this HCP assumes that the grading of facility footprints and graded work areas within 250 feet of vernal pool/swales, puddles, and stock ponds/basin would result in 4.71 acres of permanent indirect effects on suitable habitat for VPFS (Table 4-4).

Direct and indirect effects on suitable VPFS habitat and the potential for habitat modification (harm), for injury/mortality (harm), and for harassment of individual VPFS are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

The Cross Valley Line has been designed and planned to avoid and minimize effects on Covered Species, including VPFS (see AMMs PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, construction Covered Activities would directly affect 0.15 acre of suitable VPFS habitat by eliminating vernal pools/swales, puddles, and stock ponds/basins through direct fill and grading.

Several AMMs measures have been incorporated into construction Covered Activities to avoid and minimize these effects (see Table 2-2). In particular, before implementation of each construction Covered Activity, all VPFS suitable habitat would be mapped as environmentally sensitive areas and delineated in the field by qualified SCE biologists (AMM C-3) and worker environmental awareness training would be performed (AMM C-1) regarding VPFS avoidance and minimization measures.

SCE expects these AMMs to avoid and minimize the direct effects of construction Covered Activities on vernal pools/swales, puddles, and stock ponds/basins that could result from grading, or vehicles and/or equipment entering suitable VPFS habitat.

Additional measures to minimize and prevent impacts on vernal pools and their watersheds have also been included in the Conservation Strategy for VPFS and are described in Chapter 5, Conservation Strategy. These measures are similar to AMMs C-1 and C-3, which are incorporated into all construction Covered Activities, but are specific to vernal pool/swale land cover type. These habitat-specific AMMs include measures for marking and monitoring buffers (VP-1 and VP-2; see Table 5-14). See Chapter 5 for a discussion of specific conservation measures for working in and around vernal pool habitat.

Although the above measures would avoid and minimize effects on suitable VPFS habitat, the location of certain construction Covered Activities cannot be modified, and some suitable VPFS habitat would be directly and indirectly affected. Construction Covered Activities would result in permanent direct loss of up to 0.15 acre of vernal pools/swales and puddles that provide suitable VPFS habitat (Table 4-4). In nongraded work areas, construction Covered Activities may temporarily disturb up to 0.16 acre of vernal pools/swales and puddles that serve as suitable habitat for this species (Table 4-4).

Indirect Effects

Construction Covered Activities, occurring in facility footprints, graded work areas, and ungraded work areas, that are located 250 feet of suitable VPFS habitat could indirectly affect up to 4.71 acres of vernal pools/swales, puddles, and stock ponds/basins (Table 4-4).

Indirect effects include the indirect injury or mortality to VPFS later in time through several mechanisms: water quality degradation; facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; and alteration of the hydrology of vernal pools/swales and other aquatic features through modification or degradation of natural land cover in their watersheds. Most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, as summarized below.

Water Quality Degradation. Construction Covered Activities occurring within 250 feet of suitable VPFS habitat may indirectly modify or degrade habitat and injure or kill individual fairy shrimp later in time through water quality degradation that may result from the inadvertent release of toxins, such as fuels, lubricants, or solvents; or from increased erosion and deposition of sediment. However, as described in Chapter 2, Covered Activities, water quality BMPs would be implemented during construction Covered Activities to avoid and minimize this effect. Specifically, the fueling and maintenance of vehicles would be restricted within 250 feet of a waterway (AMM C-8) and erosion would be controlled near waterways, vernal pools, and vernal swales (AMM C-9). The HCP assumes that these two AMMs would fully avoid adverse effects on the water quality of suitable VPFS habitat through inadvertent release of toxins, such as fuels, lubricants or solvents, or increased deposition of sediment.

Introduction of Invasive Plants. Construction Covered Activities could facilitate the spread of invasive nonnative plants by introducing their seed from other sites on vehicles and construction equipment. Although weedy or invasive plants cannot colonize the bottoms of vernal pools, dense colonization of invasive plants in uplands adjacent to the vernal pools can reduce habitat quality by changing the vernal pool's existing hydrological regime. However, as described in Chapter 2, Covered Activities, measures for controlling invasive plants in disturbed lands would be implemented as part of a weed control plan prepared for the Cross Valley Line and the HCP (AMM C-6) (see Appendix C). The HCP assumes that these measures would effectively prevent or minimize this potential indirect effect.

Increased Public Access. The access roads created by construction Covered Activities could increase public access to the HCP Planning Area, which in turn could degrade suitable VPFS habitat and harm or kill VPFS through degradation or modification of vernal pools, vegetation, and soil; reduction of water quality; and facilitation of the spread of invasive plants. The HCP assumes that these effects would be effectively avoided by installing locked gates on access roads (AMM C-11).

Hydrological Modification. Construction Covered Activities occurring within 250 feet of VPFS suitable habitat may also indirectly affect VPFS by altering the adjacent uplands supporting the hydrologic regime of suitable VPFS habitat. The surface or subsurface hydrological connections that support the an aquatic feature's existing hydrological regime can be altered, thus changing the timing of water filling and drying, water depth, and water duration in the aquatic feature. The HCP assumes that grading activities occurring within 250 feet of vernal pools/swales, puddles, and stock ponds/basins can alter their hydrology and degrade or remove suitable VPFS habitat.

Operations and Maintenance Covered Activities

Designing and planning construction Covered Activities to avoid and minimize effects on VPFS suitable habitat has also reduced the potential for effects on VPFS during implementation of O&M Covered Activities by minimizing the amount of VPFS habitat potentially exposed to the O&M Covered Activities. Nonetheless, not all potential effects of O&M Covered Activities on suitable VPFS habitat have been avoided during construction planning and design. Approximately 0.09 acre of additional suitable VPFS habitat could be temporarily disturbed (Table 4-4).

Class 1 O&M Covered Activities, because they would be conducted entirely by SCE work crews and equipment operating within the drivable surface of constructed access roads, constructed TSP/LST pads, or from aircraft, would not result in new ground or vegetation disturbance and would have negligible effects, if any, on suitable VPFS habitat located in the HCP Planning area (Table 3-5).

Class 2 O&M Covered Activities, which include major repairs, road maintenance, and vegetation management, would involve ground disturbance. Most Class 2 O&M Covered Activities would occur in existing facility footprints and in the existing graded work areas created during construction Covered Activities. However, some O&M Covered Activities may involve additional temporary off-road travel routes, reuse of temporary guard pole sits, or require additional guard pole sites (see Table 2-3). Therefore, Class 2 O&M Covered Activities could temporarily disturb approximately 0.09 acre of suitable VPFS habitat and directly harass and harm VPFS.

Land disturbance from O&M Covered Activities also could indirectly affect VPFS habitat by affecting water quality and facilitating the spread of invasive plants. AMMs have been incorporated into O&M Covered Activities to avoid and minimize these potential direct and indirect effects. Most of these measures are equivalent to those proposed for construction Covered Activities, including the following:

- Conducting worker environmental awareness trainings (AMM O&M-2)
- Mapping and field delineating the environmentally sensitive areas (AMM O&M-3)
- Controlling the introduction and spread of invasive plants (AMM O&M-14)
- Restricting fueling and maintenance of vehicles within 250 feet of a waterway (AMM O&M-9)
- Controlling erosion near waterways (AMM O&M-10)

O&M Covered Activities include additional water quality BMPs that would reduce the potential to disturb or temporarily affect suitable VPFS habitat, including the following:

- Staying on existing roads to the greatest extent possible (AMM O&M-6)
- Restricting off-road travel outside of work areas (AMM O&M-7)
- Revegetating temporarily disturbed upland areas (AMM O&M-12)

Further AMMs to minimize and prevent impacts on vernal pools and their watersheds have also been included in the conservation strategy for VPFS and are described in Chapter 5, Conservation Strategy. These habitat-specific

AMMs include measures for marking and monitoring minimum 250-foot buffers around suitable VPFS habitat (measures VP-1 and VP-2) (see Table 5-14).

In addition, an O&M Environmental Compliance Plan would be prepared to provide guidelines for resource protection during O&M Covered Activities implemented over the 30-year ITP term (AMM O&M-1). It would provide maps of sensitive resources and required work-buffers around all sensitive resources located within the HCP Planning Area.

Furthermore, all O&M Covered Activities resulting in ground disturbance (i.e., Class 2 O&M Activities) would to go through a SCE internal environmental screening process to assure that AMMs meet the requirements of the HCP and the Permit Terms and Conditions (AMM O&M-4). This screening process includes a preactivity survey (AMM O&M-5). If suitable habitat is present, sensitive areas would be marked and avoided and the O&M activity would be monitored by a USFWS-approved biologist (AMM O&M-5).

O&M Covered Activities must sometimes be conducted under emergency conditions, however. Under emergency conditions, some AMMs may not be feasible, including but not limited to the environmental screening process and preactivity surveys. However, SCE maintains a biologist on call to support avoidance and minimization of biological resources during emergency activities.

Through implementing these measures, most indirect effects of Class 2 O&M Covered Activities on suitable VPFS habitat would be avoided. However, after implementation of these AMMs, O&M Covered Activities still could directly result in up to 0.09 acres of temporary disturbance to suitable habitat for VPFS (Table 4-4).

Table 4-4
Impact Acreages for Suitable Vernal Pool Fairy Shrimp Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
	Reproduction[1]		
West of FKC	<0.01	0.99	0.01
East of FKC	0.15	3.72	0.15
Total	**0.15**	**4.71**	**0.16**
O&M Period			
	Reproduction[1]		
West of FKC	–	–	0.01
East of FKC	–	–	0.08
Total	**–**	**–**	**0.09**

Notes: FKC = Friant-Kern Canal

[1] Reproduction = vernal pools/swales, puddles, stock ponds/basins

Source: Data compiled by AECOM in 2013

Summary of Effects on Vernal Pool Fairy Shrimp

SCE is seeking take authorization for the removal of occupied and suitable habitat and the potential harassment, harm, mortality, and other forms of take of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor. The effects of all Covered Activities would not result in more than 0.15 acre of direct permanent effects, 0.25 acre of direct temporary effects, and 4.71 acres of indirect impacts on suitable habitat for VPFS in the HCP Planning Area (Table 4-4). Also, although implementation of AMMs would substantially reduce the likelihood of O&M and construction Covered Activities harming or harassing VPFS, harm or harassment of VPFS may still occur.

Impact acreages are used to quantify incidental take of VPFS in the HCP Planning Area by the Covered Activities. The acreage of impacts on suitable habitat is used as a proxy for quantifying the number of individuals harmed or harassed because it is not possible to identify a precise number of individuals due to the small size and indeterminable number of VPFS cysts and adults in each vernal pool, and because harm and mortality would occur in the soil or an aquatic environment where it may go undetected.

4.3.1.2 VERNAL POOL TADPOLE SHRIMP

Introduction

Vernal pool tadpole shrimp (VPTS) were not detected during protocol branchiopod surveys conducted in 2010–2011 and 2011–2012; therefore, occupied habitat does not occur in the HCP Planning Area. However, suitable habitat for this species includes vernal pools and vernal swales as well as basins/stock ponds (Table 3-4). The HCP Planning area contains 18.60 acres of aquatic habitat (consisting of almost 7 acres of vernal pools/swales and 11.6 acres of stock ponds/basins) considered suitable for VPTS see Tables 3-2, 3-4, and 3-5).

The effects analysis for VPTS has the same assumptions as for VPFS, which are discussed above in more detail (see Section 4.3.1.1). These assumptions are as follows:

- Where VPTS suitable habitat occurs in facility footprints and the graded work areas, VPTS suitable habitat would be eliminated and permanently converted it to nonhabitat. Approximately 0.14 acre of suitable habitat for VPTS would be permanently directly and affected by construction Covered Activities (Table 4-5).

- Construction and O&M Covered Activities occurring in nongraded work areas would disturb but not permanently eliminate suitable VPTS habitat. Approximately 0.22 acre of VPTS suitable habitat would be temporarily disturbed (Table 4-5).

- Grading within the watersheds of vernal pools/swales can alter and indirectly modify or degrade their hydrology. Although the access road drainage systems and stormwater diversion structures (see Section 2.2.2.2) are expected to reduce some of these hydrological effects, the grading of facility footprints and graded work areas within 250 feet of vernal pool/swales and stock ponds/basins would result in 4.58 acres of permanent indirect effects on suitable habitat for VPTS (Table 4-5).

Direct and indirect effects on suitable VPTS habitat and the potential for habitat modification (harm), for injury/mortality (harm), and for harassment of individual VPTS are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

The Cross Valley Line has been designed and planned to avoid and minimize effects on Covered Species, including VPTS (see AMMs PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, construction Covered Activities would directly affect 0.14 acre of suitable VPTS habitat by eliminating vernal pools/swales and stock ponds/basins through direct fill and grading.

Several AMM have been incorporated into construction Covered Activities to avoid and minimize these effects (see Table 2-2). These AMMs, specifically C-1 and C-3, were described for VPFS above (see Section 4.3.1.1). The habitat-specific AMMs for vernal pools (VP-1 and VP-2; see Table 5-14) that are described in Chapter 5, Conservation Strategy, similarly apply to VPTS. SCE expects these AMMs to avoid and minimize the direct effects of construction Covered Activities on vernal pools/swales and stock ponds/basins that could result from grading, or vehicles and/or equipment entering suitable VPTS habitat.

Although the above measures would avoid and minimize effects on suitable VPTS habitat, the location of certain construction Covered Activities cannot be modified, and some suitable VPTS habitat would be directly and indirectly affected. Construction Covered Activities would result in permanent direct loss of up to 0.14 acres of vernal pools/swales that provide suitable VPTS habitat (Table 4-5). In nongraded work areas, construction Covered Activities may temporarily disturb up to 0.14 acre of vernal pools/swales that serve as suitable habitat for this species (Table 4-5).

Indirect Effects

Construction Covered Activities, occurring in facility footprints, graded work areas, and ungraded work areas, that are located 250 feet of suitable VPTS habitat could indirectly affect up to 4.58 acres of vernal pools/swales and stock ponds/basins (Table 4-5).

Indirect effects include the indirect injury or mortality to VPTS later in time through several mechanisms: water quality degradation; facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; and alteration of the hydrology of vernal pools/swales and other aquatic features through modification or degradation of natural land cover in their watersheds. Section 4.3.1.1 above describes how most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, including C-6, C-8, C-9, and C-11. However, hydrological modification of suitable VPTS habitat can result from grading activities occurring within 250 feet of vernal pools/swales and stock ponds/basins of suitable VPTS habitat.

Operations and Maintenance Covered Activities

Designing and planning construction Covered Activities to avoid and minimize effects on VPTS suitable habitat has also reduced the potential for effects on VPTS during implementation of O&M Covered Activities by minimizing the amount of VPTS habitat potentially exposed to the O&M Covered Activities. Nonetheless, not all potential effects of O&M Covered Activities on suitable VPTS habitat have been avoided during construction planning and design. Approximately 0.08 acre of additional suitable VPTS habitat could be temporarily disturbed (Table 4-5).

The effects of O&M Covered Activities on VPTS, including how O&M AMMs could reduce these effects, would be similar to those described above for VPFS (Section 4.3.1.1). Through implementing these measures, most indirect effects of Class 2 O&M Covered Activities on suitable VPTS habitat would be avoided. However, after implementation of these AMMs, O&M Covered Activities still could directly result in up to 0.08 acre of temporary disturbance to suitable habitat for VPTS (Table 4-5).

Table 4-5
Impact Acreages for Suitable Vernal Pool Tadpole Shrimp Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
Reproduction[1]			
West of FKC	–	0.96	–
East of FKC	0.14	3.62	0.14
Total	**0.14**	**4.58**	**0.14**
O&M Period			
Reproduction[1]			
West of FKC	–	–	–
East of FKC	–	–	0.08
Total	**–**	**–**	**0.08**

Notes: FKC = Friant-Kern Canal

[1] Reproduction = vernal pools/swales and stock ponds/basins

Source: Data compiled by AECOM in 2013

Summary of Effects on Vernal Pool Tadpole Shrimp

SCE is seeking take authorization for the removal of occupied and suitable habitat and the potential harassment, harm, mortality, and other forms of take of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor.

The effects of all Covered Activities would not result in more than 0.14 acre of direct permanent effects, 0.22 acre of direct temporary effects, and 4.58 acres of indirect impacts on suitable habitat for VPTS in the HCP Planning Area (Table 4-5). Also, although implementation of AMMs would substantially reduce the likelihood of O&M and construction Covered Activities harming or harassing VPTS, harm or harassment of VPTS may still occur.

Acreages of temporary and permanent effects on suitable habitat affected are used to quantify incidental take of VPTS in the HCP Planning Area by the Covered Activities. The acreage of impacts on suitable habitat is used as a proxy for quantifying the number of individuals harmed or harassed because it is not possible to identify a precise number of individuals due to the small size and indeterminable number of VPFS cysts and adults in each vernal pool, and because harm and mortality would occur in the soil or an aquatic environment where it may go undetected. .

4.3.1.3 VALLEY ELDERBERRY LONGHORN BEETLE

Introduction

The valley elderberry longhorn beetle (VELB) was not directly observed within the HCP Planning Area during special-status plant surveys conducted in 2010 and 2011 (Quad Knopf 2012b). However, the HCP Planning Area contains 77 elderberry shrubs with a minimum 1 inch stem diameter. Stems of elderberry greater than 1 inch in diameter are suitable habitat for VELB (Section 3.2.1.3). Therefore, VELB could be affected by the Covered Activities of this HCP.

Although facilities have been sited to avoid elderberry shrubs to the maximum extent practicable, facility footprints and work areas still include six elderberry shrubs. Through clearing and grubbing of vegetation and grading of facility footprints and graded work areas, Covered Activities would eliminate these shrubs, causing a permanent loss of habitat. In addition to directly removing shrubs, Covered Activities could directly affect elderberry shrubs by several other mechanisms that damage or stress elderberry shrubs whose driplines are located within 20 feet of facility footprints and graded work areas (e.g., excavation damaging a shrub’s root system). These effect mechanisms are described below. When these mechanisms would result in the removal or death of an elderberry stem greater than 1 inch in diameter, the HCP considers this a permanent loss of VELB habitat. When these mechanisms would result in stress to an elderberry shrub, the HCP considers this a temporary disturbance of VELB habitat. Temporary effects are not separated from permanent effects, and, therefore, both permanent and temporary effects on elderberry shrubs are addressed the same way.

As discussed below, the HCP assumes that these effects would be avoided or reduced by AMMs that are part of the Covered Activities (Tables 2-2 and 2-4) and the additional species-specific AMMs that are part of the conservation strategy (Table 5-14).

Direct and indirect effects on VELB habitat are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

Although facilities have been sited to avoid elderberry shrubs to the maximum extent practicable (during implementation of AMMs PD-1 and PD-2), facility footprints and graded work areas still could not avoid six elderberry shrubs. Through clearing and grubbing of vegetation and grading of facility footprints and graded work areas, Covered Activities would eliminate these shrubs, causing a permanent loss of VELB habitat.

Covered Activities could permanently remove suitable habitat for VELB by removing elderberry shrubs that have stems greater than 1 inch in diameter. Removal of elderberries could occur during clearing and grubbing of vegetation and grading of facility footprints, and graded work areas. In addition to directly removing shrubs, Covered Activities could affect (directly harm) elderberry shrubs by several other mechanisms:

- Stems could be removed, broken, or damaged (e.g., by their bark being torn from the underlying wood).
- Deposition of dust could stress or damage leaves.
- Vehicles, equipment, or materials on the soil surface within the root zone of elderberry shrubs could damage roots and/or compact soil.
- Excavation within the root zone of elderberry shrubs could damage root systems.

Several measures have been incorporated into Covered Activities to avoid and minimize these direct effects. Before construction Covered Activities, environmentally sensitive areas would be mapped to identify avoidance areas (AMM C-3), vehicle travel and speed would be restricted (AMM C-4), and worker environmental awareness training would be performed (AMM C-1) regarding species conservation measures.

An additional measure has been incorporated into the conservation strategy for this species (see Chapter 5, Conservation Strategy, Table 5-14, for a description of these measures). This species-specific measure includes establishing up to 100-foot buffers around elderberry shrubs that are located near the facility footprints and graded work areas, and/or located within the nongraded work areas (VELB-1). This measure would prevent soil compaction and the damage of elderberry shrub roots, which would further reduce direct effects on suitable habitat for VELB.

Although the above species-specific measure would minimize direct effects on VELB and its habitat, construction Covered Activities would result in permanent loss of six elderberry shrubs, all of which are located east of the Friant-Kern Canal. These six shrubs have a total of 50 stems greater than 1 inch in diameter that provide suitable habitat for this species.

Indirect Effects

Suitable habitat for VELB located within 100 feet of Covered Activities could be indirectly affected later in time by construction Covered Activities through the introduction of invasive plants, increased risk of fire, increased public access and associated disturbance, and road dust. Most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, as summarized below.

Introduction of Invasive Plants. Construction vehicles, equipment, and materials entering the HCP Planning Area may introduce invasive weed species that affect the future abundance of elderberry shrubs in the HCP Planning Area. However, as described in Chapter 2, Covered Activities, construction AMMs include preparation and implementation of a noxious weed plan that is expected to control invasive plants in disturbed lands (AMM C-6) (Appendix C). The HCP assumes that these measures would effectively prevent or minimize this potential indirect effect.

Increased Fire Risk. The operation of vehicles and machinery during construction Covered Activities increases the risk of igniting a fire that could damage elderberry shrubs and harm or kill VELB, if present. However, construction Covered Activities include implementation of a fire prevention and control plan (AMM C-7). Implementation of this plan would avoid an increase in fire risk.

Increased Public Access. The access roads created by construction Covered Activities could increase public access to the HCP Planning Area, which in turn could affect elderberry shrubs by damaging shoot or root systems (as described for direct effects), increasing the risk of future fire, and spreading invasive plants. These effects would be avoided, however, by constructing locked gates on access roads (AMM C-11).

Road Dust. Construction equipment and travel on dirt and gravel roads may stir up dust, which can then settle on vegetation, including elderberry shrubs, thereby degrading the quality of the shrubs as VELB habitat. A construction AMM (C-4) restricts speed limits, which would result in less dust generated. The HCP assumes that this measure would effectively minimize this potential indirect effect.

Therefore, these indirect effects would not reduce suitable habitat for VELB, or result in harm or mortality of VELB.

Operations and Maintenance Covered Activities

Planning and designing construction Covered Activities to avoid and minimize effects on VELB habitat has also reduced the potential for effects during O&M Covered Activities by minimizing the amount of VELB habitat potentially exposed to the O&M Covered Activities. Nonetheless, not all potential effects of O&M Covered Activities on VELB habitat have been avoided during planning and design. Suitable VELB habitat (i.e., elderberry shrubs) could be temporarily disturbed or indirectly affected as a result of O&M Covered Activities. An additional 33 elderberry shrubs are found within 250 feet of facility footprints and graded work areas (including 14 shrubs to the east and 19 shrubs to the west of the Friant-Kern Canal). At some time during HCP implementation, an O&M Covered Activity may permanently or temporarily affect an elderberry shrub or stems later in time. These effects are described below.

Class 1 O&M Covered Activities, because they would be conducted entirely within the drivable surface of access roads, TSP/LST pads, or from aircraft, would not result in ground or vegetation disturbance. These activities would generate dust from the road surface that may be deposited on elderberry shrubs; however, the use of access roads by vehicles during Covered Activities would be infrequent. Therefore, the HCP assumes that the direct and indirect effects of each Class 1 O&M Covered Activity on VELB suitable habitat (i.e., elderberry shrubs) would be insignificant and discountable.

Class 2 O&M Covered Activities, which include major repairs, access road maintenance, and vegetation management, would involve land disturbance. Class 2 O&M Covered Activities would occur in facility footprints and the graded and ungraded work areas that were prepared during construction Covered Activities. As described in Chapter 2, they also may involve additional off-road travel routes and guard pole sites. Therefore, Class 2 O&M Covered Activities could directly affect elderberry shrubs. O&M Covered Activities also could indirectly affect elderberries by increasing risk of fire or facilitating the spread of invasive plants.

AMMs have been incorporated into O&M Covered Activities to avoid and minimize these direct and indirect effects (see Table 2-3). Most of these measures are equivalent to those proposed for construction Covered Activities, including the following:

- Conducting worker environmental awareness trainings (AMM O&M-2)
- Mapping environmentally sensitive areas (AMM O&M-3)
- Implementing a fire prevention and control plan (AMM O&M-11)
- Controlling the introduction and spread of invasive plants (AMM O&M-14)

O&M Covered Activities also include additional BMPs that would reduce the potential to affect elderberry shrubs and VELB, including the following:

- Using existing roads to the extent feasible (AMM O&M-6)
- Restricting off-road travel in the HCP Planning Area (AMM O&M-7)
- Revegetating temporarily disturbed areas (AMM O&M-12)

Further measures to minimize and prevent impacts on elderberries, and thus VELB, have also been included in the conservation strategy for VELB and are described in Chapter 5, Conservation Strategy (see Table 5-14). These include a measure for marking a 100-foot-wide buffer area around all elderberry shrubs located within 250 feet of any O&M Covered Activity.

In addition, an Operation and Maintenance Environmental Compliance Plan would be prepared to provide guidelines for resource protection during O&M Covered Activities (AMM O&M-1); it would provide maps of sensitive resources and required buffers to be implemented within the HCP Planning Area. Furthermore, all O&M Covered Activities resulting in ground disturbance (i.e., Class 2 O&M Activities) must go through a SCE internal environmental screening process to determine avoidance and minimization requirements (AMM O&M-4). This screening process includes a preactivity survey for elderberry shrubs (AMM O&M-5). If suitable habitat is present, sensitive areas would be marked and avoided and the O&M site would be monitored by a biologist (AMM O&M-3).

O&M Covered Activities must sometimes be conducted under emergency conditions, however. Under emergency conditions, some AMMs may not be feasible, including but not limited to the environmental screening process and preactivity surveys. However, SCE maintains a biologist on call to support avoidance and minimization of biological resources during emergency activities.

Through implementing these measures, indirect effects of Class 2 O&M Covered Activities would be reduced. However, Class 2 O&M Covered Activities could still cause temporary or permanent loss of elderberry stems, particularly because additional elderberry shrubs would mature within the HCP Planning Area during the 30-year ITP term. Therefore, this HCP assumes that approximately one-third, or 11, of the 33 adjacent shrubs may be directly and/or indirectly harmed during O&M Covered Activities. Further, this HCP assumes that up to 100 elderberry stems greater than 1 inch in diameter (determined by doubling the number of stems [50] found on the six directly affected shrubs) could be affected as a result of O&M Covered Activities (Table 4-6).

Table 4-6 Impact Acreages for Valley Elderberry Longhorn Beetle Suitable Habitat (Elderberry Shrubs) within the Habitat Conservation Plan Planning Area			
Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
	Elderberry Shrubs (Stems)		
West of FKC	–	–	–
East of FKC	6 shrubs (50 stems)	–	–
Total	**6 shrubs (50 stems)**	**–**	**–**
O&M Period			
	Elderberry Shrubs (Stems)		
West of FKC	–	–	–
East of FKC	11 shrubs (100 stems)[1]	–	–
Total	**11 shrubs (100 stems)[1]**	**–**	**–**

Notes: FKC = Friant-Kern Canal

[1] Assumed to be roughly double the amount of shrubs and stems affected during construction Covered Activities during the 30-year ITP term.

Source: Quad Knopf, 2012b

Summary of Effects on Valley Elderberry Longhorn Beetle

SCE is seeking take authorization for the removal of occupied and suitable habitat and the potential harassment, harm, mortality, and other forms of take of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor. The effects of all Covered Activities on suitable habitat over the 30-year ITP term would not result in more than 150 elderberry stems greater than 1 inch in diameter being permanently lost as a result of Covered Activities (50 stems removed from facility footprints and graded work areas and 100 stems permanently lost as a result of Class 2 O&M Covered Activities). Also, although implementation of AMMs would substantially reduce the likelihood of O&M and construction Covered Activities harming or harassing VELB, harm or harassment of VELB may still occur.

The number of elderberry stems and shrubs is used to quantify incidental take of VELB in the HCP Planning Area by the Covered Activities. The number of elderberry stems and shrubs is used as a proxy for quantifying the number of individuals harmed or harassed because the number of VELB within each stem of an occupied elderberry is indeterminable, and because harm and mortality would occur inside plant stems where it may go undetected.

4.3.1.4 CALIFORNIA TIGER SALAMANDER

Introduction

The California tiger salamander (CTS) was observed in four vernal pools, totaling 1.88 acres, in the HCP Planning Area during focused surveys conducted in 2011 (see Section 3.2.1.4, Figure 3-12) Suitable habitat for this species includes vernal pools and vernal swales as well as basins/stock ponds (Table 3-4). The HCP Planning Area contains almost 7 acres of vernal pools/ swales and 11.6 acres of stock ponds/basins that are suitable breeding habitat for CTS (see Tables 3-2, 3-4, and 3-5). There are 1,048 acres of annual grassland in the HCP Planning Area (Table 3-2). Most of this annual grassland is within 1.24 miles (2 kilometers) of suitable CTS breeding habitat (i.e., vernal pools/swales and stock ponds/basins), and thus is presumed to be suitable CTS aestivating and foraging habitat. The HCP Planning Area also includes approximately 1,813 acres of orchards, row crops, and vineyards (Table 3-2); these agricultural lands are mostly within 1.24 miles of suitable CTS breeding habitat, and thus are considered to provide CTS dispersal habitat between aquatic breeding habitats and upland aestivation habitats (see Section 3.2.1.4).

The effects analysis for CTS has the same assumptions as for VPFS (Section 4.3.1.1) and VPTS (4.3.1.2), which are discussed above in more detail (see Section 4.3.1.1). These assumptions are as follows:

- Where CTS suitable habitat occurs in facility footprints and the graded work areas, CTS suitable habitat would be eliminated and permanently converted it to nonhabitat. Approximately 0.14 acre of suitable breeding habitat, 40.96 acres of aestivation/foraging habitat, and 11.65 acres of dispersal habitat for CTS would be permanently directly and affected by construction Covered Activities (Table 4-7).

- Construction and O&M Covered Activities occurring in nongraded work areas would disturb but not permanently eliminate suitable CTS habitat. Approximately 0.22 acre of breeding habitat, 52.40 acres of aestivation/foraging habitat, and 70.00 acres of dispersal habitat for CTS would be temporarily disturbed (Table 4-7).

- Grading within the watersheds of vernal pools/swales can alter and indirectly modify or degrade their hydrology. Although the access road drainage systems and stormwater diversion structures (see Section 2.2.2.2) are expected to reduce some of these hydrological effects, the grading of facility footprints and graded work areas within 250 feet of vernal pool/swales and stock ponds/basins would result in 4.58 acres of permanent indirect effects on suitable habitat for CTS (Table 4-7).

Direct and indirect effects on suitable CTS habitat and the potential for habitat modification (harm), for injury/mortality (harm), and for harassment of individual CTS are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

The Cross Valley Line has been designed to avoid and minimize effects on Covered Species, including CTS (see AMMs PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, construction Covered Activities could directly affect, both permanently and temporarily, suitable breeding, aestivation/foraging, and dispersal habitat for CTS.

- **Direct Permanent Effects.** Construction Covered Activities could affect 0.14 acre of suitable breeding habitat for CTS by eliminating vernal pools/swales and stock ponds/basins through direct fill and grading. Construction Covered Activities could also directly and permanently affect 40.96 acres of aestivation/foraging habitat and 11.65 acres of dispersal habitat for CTS through grading (Table 4-7) through grading that would remove vegetation and burrows. Construction Covered Activities could directly harass, and injury or kill (harm) individual CTSs, in particular by constructing facility footprints or graded work areas in occupied upland aestivation habitat, and by operation of vehicles or other equipment during CTS migration or dispersal.

- **Direct Temporary Effects.** In nongraded work areas, construction Covered Activities could result in direct but temporary effects on 0.14 acre of vernal pools/swales (CTS breeding habitat), 34.78 acres of annual grassland (CTS aestivation and foraging habitat), and 45.02 acres of agricultural lands (CTS dispersal habitat) (Table 4-7); these habitat could be temporarily modified or degraded vehicles and/or equipment entering these areas. It is expected that temporary disturbance to 55.07 acres of agricultural land cover would not impair or disrupt normal CTS movement because this area would be agricultural activities would resume after completion of construction Covered Activities.

Several AMMs have been incorporated into construction Covered Activities to avoid and minimize these effects (see Table 2-2). These AMMs, specifically C-1 and C-3, were described for VPFS above (see Section 4.3.1.1). The habitat-specific AMMs for vernal pools (VP-1 and VP-2; see Table 5-14) that are described in Chapter 5, Conservation Strategy, similarly apply to CTS. SCE expects these AMMs to avoid and minimize the direct effects of construction Covered Activities on vernal pools/swales and stock ponds/basins that could result from grading, or vehicles and/or equipment entering suitable CTS habitat.

Additional species-specific AMMs to minimize and prevent injury or mortality of CTS have also been included in the CTS conservation strategy (see Table 5-14). These measures include conducting preconstruction surveys for CTS (CTS-1), covering excavated holes and trenches and inspecting these for CTS before filling (CTS-2), prohibiting use of monofilament netting for erosion control (CTS-3), and marking and buffering burrow complexes (CTS-4). Although these measures minimize the potential for harassment and injury or mortality (harm) to CTS, direct effects could still occur.

Although the above measures would avoid and minimize effects on suitable CTS habitat, the location of certain construction Covered Activities cannot be modified, and some suitable CTS habitat would be directly affected, both through permanent habitat loss and temporary habitat disturbance. All Construction Covered Activities have the potential to injure or kill CTS that are aestivating below ground in burrows (e.g., by collapsing a burrow) and CTS that are moving or foraging above ground (e.g., vehicle strike), or disrupt their foraging or breeding activities. The direct loss of and disturbance to suitable CTS breeding habitat, aestivation/foraging habitat, and dispersal habitat would primarily occur east of the Friant-Kern Canal (Table 4-7).

Indirect Effects

Construction Covered Activities, occurring in facility footprints, graded work areas, and ungraded work areas located within 1.24 miles of suitable CTS breeding habitat, could indirectly affect up to 4.58 acres of vernal pools/swales and stock ponds/basins (Table 4-7).

Indirect effects include the indirect injury or mortality to CTS later in time through several mechanisms: water quality degradation; facilitation of the spread of invasive plants; and increase in public access to the HCP Planning Area and, thus, increase in associated disturbance. Section 4.3.1.1 above describes how most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, including C-6, C-8, C-9, and C-11.

In addition to the indirect effects described in more detail in Section 4.3.1.1, other indirect effects specific to CTS could result from construction Covered Activities.

- **CTS Predator Attraction to Trash.** Construction Covered Activities would generate trash that could attract predators of CTS, such as coyotes. However, this trash would be disposed of in closed containers and removed from the HCP Planning Area daily (AMM C-10). Thus, this potential indirect effect would be avoided.

- **Interference with CTS Mobility.** Construction Covered Activities would recontour land and install permanent, maintained facilities (i.e., TSPs, LSTs, access roads, and road drainage systems and stormwater diversion structures). Thus, these Covered Activities could potentially create features that are obstacles that can disrupt or impair normal CTS movement or trap migrating CTS. During design and planning of the Cross Valley Line, features were redesigned to avoid this potential effect. In particular, roadside swales in the vicinity of Colvin Mountain were redesigned to be gravel filled to reduce their potential to trap and kill CTS or to divert dispersing CTS from their migration route. Several modifications were made to road drainage systems and stormwater diversion structures to prevent entrapment of CTS and interference with movement patterns (see Section 2.2.2.2).

Finally, indirect effects on CTS and its suitable habitat could result from the alteration of the hydrology of vernal pools/swales and other aquatic features through modification or degradation of natural land cover in their watersheds. Construction Covered Activities occurring within 250 feet of CTS suitable habitat may also indirectly affect CTS by altering the adjacent uplands supporting the hydrologic regime of suitable CTS habitat. The surface or subsurface hydrological connections that support the an aquatic feature's existing hydrological regime can be altered, thus changing the timing of water filling and drying, water depth, and water duration in the aquatic feature. The HCP assumes that grading activities occurring within 250 feet of vernal pools/swales and stock ponds/basins can alter their hydrology and degrade or remove suitable CTS habitat.

Most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, including C-6, C-8, C-9, C-10, and C-11, as well as the considerations that have been incorporated in the designs of the access roads and the drainage systems and stormwater diversion systems. However, hydrological modification of suitable CTS breeding habitat could result from grading activities occurring within 250 feet of vernal pools/swales and stock ponds/basins. Up to 4.58 acres of vernal pools/swales and stock ponds/basins could be indirectly affected through hydrologic modification resulting from construction Covered Activities occurring within 250 feet of these features.

Operations and Maintenance Covered Activities

Planning and designing construction Covered Activities to avoid and minimize effects on CTS habitat has also reduced the potential for effects on CTS during implementation of O&M Covered Activities by minimizing the amount of CTS habitat potentially exposed to the O&M Covered Activities. Nonetheless, not all potential effects of O&M Covered Activities on CTS individuals and suitable CTS habitat have been avoided during construction planning and design. Approximately 0.03 acre of additional suitable CTS breeding habitat could be temporarily disturbed (Table 4-7) by O&M Covered Activities.

The effects of O&M Covered Activities on CTS, including how O&M AMMs could reduce these effects, would be similar to those described above for VPFS (Section 4.3.1.1). Through implementing these measures, most indirect effects of Class 2 O&M Covered Activities on suitable CTS habitat would be avoided. However, after implementation of these AMMs, O&M Covered Activities still could directly result in temporary disturbance to suitable habitat for CTS (Table 4-7).

Class 1 O&M Covered Activities, because they would be conducted entirely within the drivable surface of constructed access roads, constructed TSP/LST pads, or from aircraft, would not result in ground or vegetation disturbance and, therefore, have a limited effect, if any on CTS suitable habitats. However, Class 1 O&M Covered Activities could directly harm CTS if vehicles crush salamanders dispersing across the access roads. AMMs that restrict vehicle access, speeds and nighttime travel (AMMs O&M-6 and O&M-7) would reduce the likelihood of a vehicle killing a dispersing CTS crossing an access road.

Class 2 O&M Covered Activities, which include major repairs, road maintenance, and vegetation management, would involve ground disturbance. Most Class 2 O&M Covered Activities would occur in existing facility footprints and in the existing graded work areas used during construction Covered Activities. Class 2 O&M Covered Activities could directly harm CTS if vehicles crush salamanders dispersing across the access roads. AMMs that restrict vehicle access, speeds, and nighttime travel (AMMs O&M-6 and O&M-7) would reduce the likelihood of a vehicle killing a dispersing CTS crossing an access road. Additionally, some O&M Covered Activities may involve additional off-road travel routes, reuse of temporary guard pole sites, or require additional guard pole sites (see Table 2-3). Therefore, Class 2 O&M Covered Activities could temporarily harass and harm CTS as well as modify or degrade CTS suitable habitats, including 0.08 acre of breeding habitat, 17.62 acres of aestivation/foraging habitat, and 14.93 acres of dispersal habitat.

The effects of O&M Covered Activities on CTS, including how O&M AMMs could reduce these effects, would be similar to those described above for VPFS (Section 4.3.1.1). The AMMs that have been incorporated into O&M Covered Activities to avoid and minimize direct and indirect effects on CTS are similar to those that would be implemented for construction Covered Activities. Some effects, including encroachment into CTS suitable habitat by O&M vehicles and equipment would be avoided and minimized through environmental screening (O&M-4) and preactivity surveys (O&M-5), worker environmental awareness training (O&M-2), mapping and field delineating CTS habitats (O&M-3), and restricting road travel (O&M-6 and O&M-7). Other effects, such as introduction of pollutants or sediment to CTS breeding habitat that could reduce water quality, facilitation of spread of invasive plants, and trash that could attract CTS predators would be addressed through the implementation of AMMs, including O&M-9 (restricting fueling near waterways), O&M-10 (controlling erosion near waterways), O&M-14 (weed control plan), and O&M-13 (removal of trash). Nongraded work areas would be revegetated following the completion of the activity (O&M-12).

Additional habitat- and species-specific AMMs are included in the CTS conservation strategy, which is outlined in Chapter 5 (see Table 5-14). These AMMs would minimize and prevent impacts on vernal pools and their watersheds by marking and monitoring minimum 250-foot buffers around suitable VPFS habitat (measures VP-1 and VP-2). Species-specific AMMs are similar to those described above for CTS under Direct Effects (i.e., CTS-1 through CTS-4).

O&M Covered Activities must sometimes be conducted under emergency conditions, however. Under emergency conditions, some AMMs may not be feasible, including but not limited to the environmental screening process and preactivity surveys. However, SCE maintains a biologist on call to support avoidance and minimization of biological resources during emergency activities.

Through implementing these measures, most indirect effects of Class 2 O&M Covered Activities on suitable CTS habitat would be avoided. However, after implementation of these AMMs, O&M Covered Activities still could temporarily affect 0.08 acre of breeding habitat, 17.62 acres of aestivation/foraging habitat, and 14.93 acres of dispersal habitat for CTS (Table 4-7), including CTS that may occur in those areas.

Summary of Effects on California Tiger Salamander

SCE is seeking take coverage for the removal of occupied and suitable habitat and the potential harassment, harm, mortality, and other forms of take of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor. As summarized in Table 4-7, the effects of all Covered Activities would not result in more than the following:

- Direct permanent effects on 0.14 acre of breeding habitat, 40.96 acres of aestivation/foraging habitat, and 11.65 acres of dispersal habitat for CTS
- Direct temporary effects on 0.22 acre of breeding habitat, 52.40 acres of aestivation/foraging habitat, and 70.00 acres of dispersal habitat for CTS
- Indirect impacts on 4.58 acres to CTS breeding habitat

Although implementation of AMMs would substantially reduce the likelihood of O&M and construction Covered Activities harming or harassing CTS, harm or harassment of CTS may still occur.

Impact acreages are used to quantify incidental take of CTS in the HCP Planning Area by the Covered Activities. The acreage of impacts on suitable habitat is used as a proxy for quantifying the number of individuals harmed or harassed as determining incidental take of CTS individuals is not possible because of the relatively small size of CTS larvae and adults, and because harm and mortality would occur in an aquatic environment or underground where it would likely go undetected.

Table 4-7
Impact Acreages for California Tiger Salamander Suitable Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
Reproduction[1]			
West of FKC	–	0.96	–
East of FKC	0.14	3.62	0.14
Total	0.14	4.58	0.14
Aestivation/Foraging[2]			
West of FKC	–	–	4.25
East of FKC	40.96	–	30.53
Total	40.96	–	34.78
Movement[3]			
West of FKC	6.37	–	46.68
East of FKC	5.28	–	8.39
Total	11.65	–	55.07
O&M Period			
Reproduction[1]			
West of FKC	–	–	
East of FKC	–	–	0.08
Total	–	–	0.08
Aestivation/Foraging[2]			
West of FKC	–	–	0.94
East of FKC	–	–	16.68
Total	–	–	17.62
Movement[3]			
West of FKC	–	–	10.35
East of FKC	–	–	4.58
Total	–	–	14.93

Notes: FKC = Friant-Kern Canal

[1] Reproduction = vernal pools/swales and stock ponds/basins

[2] Aestivation = annual grassland

[3] Movement (Dispersal) = orchards, vineyards, and row/field crops

Source: Data compiled by AECOM in 2013

4.3.1.5 WESTERN SPADEFOOT TOAD

Introduction

The western spadefoot toad (WSFT) was observed in 35 vernal pools/swales totaling 0.97 acre in the HCP Planning Area during focused surveys conducted in 2011 and 2012 protocol surveys for listed vernal pool branchiopods and CTS (Figure 3-15). The HCP Planning Area contains almost 7 acres of vernal pools and swales and less than 1 acre of puddles that serve as suitable breeding habitat for WSFT. There are 1,048 acres of annual grassland suitable for aestivating and foraging habitat WSFT (Section 3.2.1.5). Annual grasslands within 1.24 miles (2 kilometers) of suitable WSFT breeding habitat (i.e., vernal pools/swales and puddles) are presumed to be suitable WSFT aestivating and foraging habitat.

The effects analysis for WSFT has the same assumptions as for VPFS (Section 4.3.1.1), VPTS (4.3.1.2), and CTS (Section 4.3.1.4), which are discussed above in more detail. These assumptions are as follows:

- Where WSFT suitable habitat occurs in facility footprints and the graded work areas, WSFT suitable habitat would be eliminated and permanently converted it to nonhabitat. Approximately 0.15 acre of suitable breeding habitat and 40.96 acres of aestivation/foraging habitat for WSFT would be permanently directly and affected by construction Covered Activities (Table 4-8).

- Construction and O&M Covered Activities occurring in nongraded work areas would disturb but not permanently eliminate suitable WSFT habitat. Approximately 0.25 acre of breeding habitat and 52.40 acres of aestivation/foraging habitat WSFT would be temporarily disturbed (Table 4-8).

- Grading within the watersheds of vernal pools/swales can alter and indirectly modify or degrade their hydrology. Although the access road drainage systems and stormwater diversion structures (see Section 2.2.2.2) are expected to reduce some of these hydrological effects, the grading of facility footprints and graded work areas within 250 feet of vernal pool/swales and stock ponds/basins would result in 3.69 acres of permanent indirect effects on suitable habitat for WSFT (Table 4-8).

Direct and indirect effects on suitable WSFT habitat and the potential for habitat modification (harm), for injury/mortality (harm), and for harassment of individual WSFT are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

The Cross Valley Line has been designed to avoid and minimize effects on Covered Species, including WSFT (see measures PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, construction Covered Activities could directly affect, both permanently and temporarily, suitable breeding and aestivation/foraging habitats for WSFT by modifying or degrading suitable breeding habitat, eliminating or impairing the hydrologic function of vernal pools/swales and puddles, and grading and removing or modifying suitable foraging and aestivation habitat for adult WSFT.

- **Direct Permanent Effects.** Construction Covered Activities could affect 0.15 acre of suitable breeding habitat for WSFT by eliminating vernal pools/swales and puddles through direct fill and grading. Construction Covered Activities could also directly and permanently affect 40.96 acres of aestivation/foraging habitat for WSFT through grading (Table 4-8) through grading that would remove vegetation. Construction Covered Activities could directly harass and injure or kill (harm) individual WSFT, in particular by constructing facility footprints or graded work areas in occupied upland aestivation habitat.

- **Direct Temporary Effects.** In nongraded work areas, construction Covered Activities could result in direct but temporary effects on 0.16 acre of vernal pools/swales (WSFT breeding habitat) and 34.78 acres of annual grassland (WSFT aestivation and foraging habitat (Table 4-8); these habitats could be temporarily modified or degraded vehicles and/or equipment entering these areas.

Several AMMs have been incorporated into construction Covered Activities to avoid and minimize these effects (see Table 2-2). These AMMs, specifically C-1 and C-3, were described for VPFS above (see Section 4.3.1.1). The habitat-specific AMMs for vernal pools (VP-1 and VP-2; see Table 5-14) that are described in Chapter 5, Conservation Strategy, similarly apply to WSFT. SCE expects these AMMs to avoid and minimize the direct effects of construction Covered Activities on vernal pools/swales and puddles that could result from grading, or vehicles and/or equipment entering suitable WSFT habitat.

Additional species-specific AMMs to minimize and prevent injury or mortality of WSFT have also been included in the WSFT conservation strategy (see Table 5-14). These measures include conducting preconstruction surveys for WSFT (WSFT-1) and covering excavated holes and trenches and inspecting these for WSFT before filling (WSFT-2. Although these measures minimize the potential for harassment and injury or mortality (harm) to CTS, direct effects could still occur.

Although the above measures would avoid and minimize effects on suitable WSFT habitat, the location of certain construction Covered Activities cannot be modified, and some suitable WSFT habitat would be directly affected, both through permanent habitat loss and temporary habitat disturbance. The direct loss of and disturbance to suitable WSFT breeding habitat and aestivation/foraging habitat would primarily occur east of Friant-Kern Canal (Table 4-8).

Indirect Effects

Construction Covered Activities, occurring in facility footprints, graded work areas, and ungraded work areas that are located within 1.24 miles of suitable WSFT breeding habitat, could indirectly affect up to 3.69 acres of vernal pools/swales and puddles (Table 4-8). WSFT could be harm, harassed, or killed through several indirect mechanisms.

Indirect effects include the indirect injury or mortality to WSFT later in time through several mechanisms: water quality degradation; facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; and attraction of predators to the site. Sections 4.3.1.1 and 4.3.1.4 above describe how most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, including C-6, C-8, C-9, C-10, and C-11.

Similar to VPFS (Section 4.3.1.1), VPTS (Section 4.3.1.2), and CTS (Section 4.3.1.4), indirect effects on WSFT and its suitable habitat could result from the alteration of the hydrology of vernal pools/swales and puddles through modification or degradation of natural land cover in their watersheds. The HCP assumes that grading activities occurring within 250 feet of vernal pools/swales and puddles can alter their hydrology and degrade or remove suitable WSFT habitat. Hydrological modification of up to 3.69 acres of suitable WSFT breeding habitat could result from grading activities occurring within 250 feet of vernal pools/swales and stock ponds/basins.

Operations and Maintenance Covered Activities

Planning and designing construction Covered Activities to avoid and minimize effects on WSFT habitat has also reduced the potential for effects on WSFT during O&M Covered Activities by minimizing the amount of WSFT habitat potentially exposed to the O&M Covered Activities. Nonetheless, not all potential effects of O&M Covered Activities on WSFT habitat have been avoided during planning and design.

Class 1 O&M Covered Activities, because they would be conducted entirely within the drivable surface of access roads, TSP/LST pads, or from aircraft, would not result in ground or vegetation disturbance and would have negligible effects, if any, on WSFT suitable habitat. However, during Class 1 O&M and Class 2 O&M Covered Activities, vehicles could crush a WSFT. AMMs that restrict vehicle speeds and travel (AMMs O&M-6 and O&M-7) would reduce the likelihood of a vehicle killing a WSFT.

The effects of Class 1 and Class 2 O&M Covered Activities on WSFT, including how O&M AMMs could reduce these effects, would be similar to those described above for VPFS (Section 4.3.1.1) and CTS (Section 4.3.1.4). Through implementing the O&M measures, as well as the habitat-and species-specific AMMs (which are described above for WSFT under Direct Effects), most indirect effects of Class 2 O&M Covered Activities on suitable WSFT habitat would be avoided. However, after implementation of these AMMs, Class 2 O&M Covered Activities could temporarily harass and harm WSFT as well as modify or degrade WSFT suitable habitats, including 0.09 acre of breeding habitat and 17.62 acres of aestivation/foraging habitat (Table 4-8), including WSFT that may occur in those areas.

Summary of Effects on Western Spadefoot Toad

In case WSFT becomes Federally listed, SCE is seeking take coverage for the removal of occupied and suitable habitat and the potential harassment, harm, mortality, and other forms of take of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line’s transmission corridor. As summarized in Table 4-8, the effects of all Covered Activities on WSFT would not result in more than the following:

- Direct permanent effects on 0.15 acre of breeding habitat and 40.96 acres of aestivation/foraging habitat for WSFT
- Direct temporary effects on 0.54 acre of breeding habitat and 52.40 acres of aestivation/foraging habitat for WSFT
- Indirect impacts on 3.69 acres of WSFT breeding habitat

Also, although implementation of AMMs would substantially reduce the likelihood of O&M and construction Covered Activities harming or harassing WSFT, harm or harassment of WSFT may still occur.

Impact acreages are used to quantify incidental take of WSFT in the HCP Planning Area by the Covered Activities. The acreage of impacts on suitable habitat is used as a proxy for quantifying the number of individuals harmed or harassed because determining the incidental take of WSFT individuals is not possible due to the relatively small size of WSFT larvae and adults, and because harm and mortality frequently would occur in an aquatic environment or underground where it would likely go undetected.

Table 4-8
Impact Acreages for Western Spadefoot Toad Suitable Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
Reproduction[1]			
West of FKC	<0.01	0.03	0.01
East of FKC	0.15	3.66	0.15
Total	0.15	3.69	0.16
Aestivation and Foraging[2]			
West of FKC	-	–	4.25
East of FKC	40.96	–	30.53
Total	40.96	–	34.78
O&M Period			
Reproduction[1]			
West of FKC	–	–	–
East of FKC	–	–	0.09
Total	–	–	0.09
Aestivation and Foraging[1]			
West of FKC	–	–	0.94
East of FKC	–	–	16.68
Total	–	–	17.62

Notes: FKC = Friant-Kern Canal:

[1] Reproduction = vernal pools and vernal swales, puddles

[2] Aestivation and foraging = annual grassland

Source: Data compiled by AECOM in 2013

4.3.1.6 LITTLE WILLOW FLYCATCHER

Introduction

A willow flycatcher was detected in 2011 and 2012 during focused surveys at the St. John's River. It could not be determined whether the bird was a little willow flycatcher (LWF) or a southwestern willow flycatcher (SWF). The HCP Planning Area contains approximately 8 acres of riparian habitat (Table 3-5), of which 5.38 acres along Cottonwood Creek and St. John's River are considered suitable foraging and breeding habitat for LWF.

Work areas and facility footprints do not include riparian vegetation. However, riparian vegetation is adjacent to work areas and facility footprints, and Covered Activities include the implementation of a riparian habitat enhancement plan (see Appendix F). Therefore, although Covered Activities would not result in the removal of any suitable habitat in riparian vegetation (Table 4-9), Covered Activities have the potential to cause harassment of nesting birds..

Direct and indirect effects on LWF habitat and the potential for harassment of individual birds are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

The Cross Valley Line has been designed to avoid and minimize effects on Covered Species, including LWF (see measures PD-1, PD-2, and PD-3 in Table 2-2). Construction Covered Activities would not result in any temporary or permanent loss of riparian habitat that is suitable foraging and breeding habitat for LWF.

Construction Covered Activities, however, also have the potential to harass or harm nesting LWF (e.g., through ground vibration or loud noise). Additionally, noise and ground vibration could temporarily affect nesting LWF in adjacent riparian habitat. Construction Covered Activities include measures to avoid or minimize harassment or harm to nesting LWF. These measures include the following:

- Conducting environmental awareness training (AMM C-1)
- Mapping environmentally sensitive areas (AMM C-3)
- Implementing nesting bird avoidance (C-2)
- Prohibiting pets (AMM C-5)
- Enhancing riparian habitat in the HCP Planning Area (Nesting Birds-2; see Appendix F)

These measures reduce the likelihood that individuals of LWF would be directly affected. These measures would be implemented to avoid or minimize the potential for mortality or harm to LWF. Nonetheless, harassment of nesting LWFs could still occur.

Indirect Effects

Suitable habitat for LWF could be indirectly affected by construction Covered Activities. Indirect effects include the indirect injury or mortality to LWF later in time through several mechanisms: facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; increased risk of fire; and attraction of predators to the site. Section 4.3.1.3 above describes how most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, including C-6, C-7, C-10, and C-11. Therefore, construction Covered Activities would not indirectly reduce the availability or suitability of habitat for LWF, or result in harassment or harm (including mortality) of flycatchers.

Operations and Maintenance Covered Activities

Planning and designing construction Covered Activities to avoid and minimize effects on LWF habitat has also reduced the potential for effects on LWF during O&M Covered Activities by minimizing the amount of habitat potentially exposed to O&M Covered Activities (see measures PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, nesting birds could be harassed or harmed, and habitat for LWF could be temporarily disturbed or indirectly affected as a result of O&M Covered Activities.

Class 1 O&M Covered Activities, because they would be conducted entirely within the drivable surface of access roads, TSP/LST pads, or from aircraft, would not result in ground or vegetation disturbance and would have negligible effects, if any, on LWF habitat or individual birds.

The effects of Class 2 O&M Covered Activities on LWF, including how O&M AMMs could reduce these effects, would be similar to those described above for VELB (Section 4.3.1.3). Through implementing the O&M AMMs, indirect effects of Class 2 O&M Covered Activities on suitable LWF habitat would be avoided.

Additionally, O&M Covered Activity, Vegetation Management–Tree Pruning, could temporarily remove some riparian vegetation. This O&M Covered Activity includes annual pruning of riparian trees at the St. John's River and Cottonwood Creek that would temporarily affect up to 0.02 acre. Although tree pruning would temporarily disturb suitable habitat, it would not reduce the amount of habitat, and it is not expected to result in harassment, injury, or mortality of nesting birds because this activity would be conducted outside of the nesting season.

A species-specific AMM (Nesting Birds-1; see Appendix E) has been included in the LWF conservation strategy (see Chapter 5). This measure entails scheduling of Covered Activities to avoid the nesting season where feasible, and during the nesting season, conducting nesting survey and establishing buffers around nests.

Through implementing these measures, indirect effects of Class 2 O&M Covered Activities would be reduced to insignificant levels. After implementing these measures, O&M Covered Activities would not cause temporary or permanent loss of the riparian habitat of LWF (Table 4-9). However, although the implementation of AMMs would substantially reduce the likelihood of impacts on nesting LWFs, direct effects in the form of harassment of individual birds could still occur.

Summary of Effects on Little Willow Flycatcher

SCE is seeking take authorization in the form of harassment of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor. Covered Activities would not result in the temporary disturbance or permanent loss of riparian habitat (Table 4-9). The annual pruning of up to 0.02 acre of riparian trees would temporarily disturb riparian vegetation; however, because this activity would be conducted outside the nesting season, no impacts on nesting birds would be expected to occur. Other construction and O&M activities, however, may occur during the nesting season. Although implementation of AMMs would substantially reduce the likelihood of O&M and construction Covered Activities affecting nesting LWFs, harassment of nesting LWFs could still occur.

At two locations in the HCP Planning Area, suitable nesting habitat for LWF exists near facilities. Each of these locations could support a nesting pair of LWFs. If construction and O&M activities of nearby facilities could not be avoided during the nesting season, potential noise and ground vibration could temporarily affect nesting LWF in adjacent riparian habitat. Because of the marginal quality of the riparian habitat, it is not anticipated that more than one nest per 3 years of operations on average would be affected.

Table 4-9
Impact Acreages for Little Willow Flycatcher Suitable Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary[1]
	Direct	Indirect	
Construction Period			
	Reproduction, Foraging[2]		
West of FKC	–	–	–
East of FKC	–	–	--
Total	–	–	--
O&M Period			
	Reproduction, Foraging[2]		
West of FKC	–	–	–
East of FKC	–	–	–
Total	–	–	–

Notes: FKC = Friant-Kern Canal

[1] Does not include up to 0.02 acre of tree pruning in riparian areas conducted annually.

[2] Reproduction and foraging = riparian

Source: Data compiled by AECOM in 2013

4.3.1.7 SOUTHWESTERN WILLOW FLYCATCHER

Introduction

A willow flycatcher was detected in 2011 and 2012 during focused surveys at the St. John’s River. It could not be determined whether the bird was a LWF or a southwestern willow flycatcher (SWF). The HCP Planning Area contains approximately 8 acres of riparian habitat (Table 3-5), of which 5.38 acres along Cottonwood Creek and St. John’s River are considered suitable foraging and breeding habitat for SWF.

Work areas and facility footprints do not include riparian vegetation. However, riparian vegetation is adjacent to work areas and facility footprints, and Covered Activities include the implementation of a riparian habitat enhancement plan (see Appendix F). Therefore, although Covered Activities would not result in the removal of any suitable habitat in riparian vegetation (Table 4-10), Covered Activities have the potential to cause injury or mortality (harm) or harassment of nesting birds.

Direct and indirect effects on SWF habitat and the potential for harassment of individual birds are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

The Cross Valley Line has been designed to avoid and minimize effects on Covered Species, including SWF (see measures PD-1, PD-2, and PD-3 in Table 2-2). Construction Covered Activities would not result in any temporary or permanent loss of riparian habitat that is suitable foraging and breeding habitat for SWF.

Direct effects on SWF resulting from construction Covered Activities, and the construction AMMs that would avoid and minimize these effects, would be similar to those described for LWF in Section 4.3.1.6. These measures reduce the likelihood that individuals of SWF would be directly affected. Nonetheless, harassment of nesting SWFs could still occur.

Indirect Effects

Suitable habitat for SWF could be indirectly affected by construction Covered Activities. Indirect effects include the indirect injury or mortality to SWF later in time through several mechanisms: facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; increased risk of fire; and attraction of predators to the site. Section 4.3.1.3 above describes how most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, including C-6, C-7, C-10, and C-11. Therefore, construction Covered Activities would not reduce the availability or suitability of habitat for SWF, or result in harassment or harm (including mortality) of flycatchers.

Operations and Maintenance Covered Activities

Planning and designing construction Covered Activities to avoid and minimize effects on LWF habitat has also reduced the potential for effects on LWF during O&M Covered Activities by minimizing the amount of habitat potentially exposed to O&M Covered Activities (see measures PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, nesting birds could be harassed or harmed, and habitat for SWF could be temporarily disturbed or indirectly affected as a result of O&M Covered Activities.

Effects on SWF resulting from O&M Covered Activities, and O&M AMMs that would avoid and minimize these effects, would be similar to those described for LWF in Section 4.3.1.6. These measures reduce the likelihood that individuals of SWF would be directly affected. After implementing these measures, O&M Covered Activities would not cause temporary or permanent loss of the riparian habitat of SWF (Table 4-10). However, although the implementation of AMMs would substantially reduce the likelihood of impacts on nesting SWFs, direct effects in the form of harassment of nesting birds could still occur.

Summary of Effects on Southwestern Willow Flycatcher

SCE is seeking take authorization in the form of harassment of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor. Covered Activities would not result in the temporary disturbance or permanent loss of riparian habitat (Table 4-10). The annual pruning of up to 0.02 acre of riparian trees would temporarily disturb riparian vegetation; however, because this activity would be conducted outside the nesting season, no impacts on nesting birds would be expected to occur. Other construction and O&M activities, however, may occur during the nesting season. Although implementation of AMMs would substantially reduce the likelihood of O&M and construction Covered Activities affecting nesting SWFs, harassment of nesting SWFs could still occur.

At two locations in the HCP Planning Area, suitable nesting habitat for SWF exists near facilities. Each of these locations could support a nesting pair of SWFs. If construction and O&M activities of nearby facilities could not be avoided during the nesting season, potential noise and ground vibration could temporarily affect nesting SWF in adjacent riparian habitat. Because of the marginal quality of the riparian habitat, it is not anticipated that more than one nest per 3 years of operations on average would be affected.

Table 4-10
Impact Acreages for Southwestern Willow Flycatcher Suitable Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary[1]
	Direct	Indirect	
Construction Period			
Reproduction, Foraging[2]			
West of FKC	–	–	–
East of FKC	–	–	–
Total	–	–	–
O&M Period			
Reproduction, Foraging[2]			
West of FKC	–	–	–
East of FKC	–	–	–
Total	–	–	–

Notes: FKC = Friant-Kern Canal

[1] Does not include up to 0.02 acre of tree pruning in riparian areas conducted annually.

[2] Reproduction and foraging = riparian

Source: Data compiled by AECOM in 2013

4.3.1.8 LEAST BELL'S VIREO

Introduction

There are no CNDDB records for least Bell's vireo (LBV) within the HCP Planning Area, and the species was not detected during surveys at St. John's River or Cottonwood Creek in 2011 and 2012. However, the species is recolonizing portions of its former range, and thus, it may occur in the HCP Planning Area during Plan implementation. The HCP Planning Area contains approximately 8 acres of riparian habitat (Table 3-5), of which 5.38 acres along Cotton Creek and St. John's River are considered suitable foraging and breeding habitat for LBV.

Work areas and facility footprints do not include riparian vegetation. However, riparian vegetation is adjacent to work areas and facility footprints, and Covered Activities include the implementation of a riparian habitat enhancement plan (see Appendix F). Therefore, although Covered Activities would not result in the removal of any riparian vegetation (Table 4-11), Covered Activities have the potential to cause injury or mortality (harm) or harassment of nesting birds.

Direct and indirect effects on LBV habitat and the potential for harassment of individual birds are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

The Cross Valley Line has been designed to avoid and minimize effects on Covered Species, including SWF (see measures PD-1, PD-2, and PD-3 in Table 2-2). Construction Covered Activities would not result in any temporary or permanent loss of riparian habitat that is suitable foraging and breeding habitat for LBV.

Direct effects on LBV resulting from construction Covered Activities, and the construction AMMs that would avoid and minimize these effects, would be similar to those described for LWF in Section 4.3.1.6. These measures reduce the likelihood that individuals of LBV would be directly affected. Nonetheless, harassment of a nesting LBV could still occur.

Indirect Effects

Suitable habitat for LBV could be indirectly affected by construction Covered Activities. Indirect effects include the indirect injury or mortality to LBV later in time through several mechanisms: facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; increased risk of fire; and attraction of predators to the site. Section 4.3.1.3 above describes how most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, including C-6, C-7, C-10, and C-11. Therefore, construction Covered Activities would not reduce the availability or suitability of habitat for LBV, or result in harassment or harm (including mortality) of flycatchers.

Operations and Maintenance Covered Activities

Planning and designing construction Covered Activities to avoid and minimize effects on LWF habitat has also reduced the potential for effects on LWF during O&M Covered Activities by minimizing the amount of habitat potentially exposed to O&M Covered Activities (see measures PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, nesting birds could be harassed or harmed, and habitat for SWF could be temporarily disturbed or indirectly affected as a result of O&M Covered Activities.

Effects on SWF resulting from O&M Covered Activities, and O&M AMMs that would avoid and minimize these effects, would be similar to those described for LWF in Section 4.3.1.6. These measures reduce the likelihood that individuals of SWF would be directly affected. After implementing these measures, O&M Covered Activities would not cause temporary or permanent loss of the riparian habitat of SWF (Table 4-11). However, although the implementation of AMMs would substantially reduce the likelihood of impacts on nesting LBV, direct effects in the form of harassment of individual birds could still occur.

Table 4-11
Impact Acreages for Least Bell's Vireo Suitable Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary[1]
	Direct	Indirect	
Construction Period			
Reproduction, Foraging[2]			
West of FKC	–	–	–
East of FKC	–	–	–
Total	–	–	–
O&M Period			
Reproduction, Foraging[2]			
West of FKC	–	–	–
East of FKC	–	–	–
Total	–	–	–

Notes: FKC = Friant-Kern Canal

[1] Does not include up to 0.02 acre of tree pruning in riparian areas conducted annually.

[2] Reproduction and foraging = riparian

Source: Data compiled by AECOM in 2013

Summary of Effects on Least Bell's Vireo

SCE is seeking take authorization in the form of harassment of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor. Covered Activities would not result in the temporary disturbance or permanent loss of riparian habitat (Table 4-11). The annual pruning of up to 0.02 acre of riparian trees would temporarily disturb riparian vegetation; however, because this activity would be conducted outside the nesting season, no impacts on nesting birds would be expected to occur. Other construction and O&M activities, however, may occur during the nesting season, and could result in harassment of a nesting LBVs.

Although LBV has not been documented in the HCP Planning Area, suitable nesting habitat for LBV exists at two locations near facilities. If construction and O&M activities of nearby facilities could not be avoided during the nesting season, potential noise and ground vibration could temporarily affect nesting SWF in adjacent riparian habitat. Because of the marginal quality of the riparian habitat, it is not anticipated that more than one nest per 3 years of operations on average would be affected.

4.3.1.9 BURROWING OWL

Introduction

The burrowing owl (BUOW) was observed in the HCP Planning Area in 2011 (Figure 3-18). Occupied habitat within the HCP Planning Area consists of annual grassland east of the Friant-Kern Canal. The HCP Planning Area contains 1,048 acres of annual grassland habitat, which is considered suitable foraging and breeding habitat for BUOW. There are also approximately 344 acres of row crops and seasonal dry land cover that are not primary habitat for burrowing owl, but may provide foraging opportunities (Tables 3-4 and 3-5).

Although facilities have been sited to avoid suitable BUOW habitat to the maximum extent practicable, Covered Activities would largely eliminate breeding (burrow) and foraging habitat in facility footprints because these areas would be permanently converted to nonhabitat.

Grading of work areas would modify and degrade suitable foraging and breeding habitat for BUOW. Although annual grassland would be restored to a cover of annual grasses and forbs within 1 year of disturbance, Covered Activities in graded work areas could affect subsurface habitat elements, and these impacts could persist for more than 12 months, and accordingly, this would be considered a permanent impact. Agricultural land cover disturbed by grading work areas would also be restored to agricultural use within 1 year; Covered Activities on agricultural land would not affect subsurface habitat elements for this species, and thus, grading of work areas in agricultural land cover would be considered a temporary impact.

Similarly, suitable habitat in nongraded work areas in annual grassland and agricultural land cover would remain in or be restored to this land cover type within 1 year. Therefore, because nongraded work areas would be revegetated, disturbance of BUOW habitat in nongraded work areas would be temporary.

Establishing facility footprints on adjacent land cover would not convert adjacent land cover types providing suitable habitat to nonhabitat. This potential indirect effect and other direct and indirect effects on BUOW are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

Although the Cross Valley Line has been designed to avoid and minimize effects on Covered Species, including BUOW (see measures PD-1, PD-2, and PD-3 in Table 2-2), construction Covered Activities would result in permanent loss of up to 40.96 acres and temporary disturbance of 34.78 acres of annual grassland habitat that is suitable foraging and breeding habitat for BUOW (Table 4-12). In addition, construction Covered Activities would also result in the permanent loss of 2.33 acres and temporary disturbance of 9.26 acres of row crops that provide potential foraging habitat for BUOW (Table 4-12). Covered Activities would permanently eliminate suitable BUOW habitat when the area is maintained clear of vegetation (i.e., facility footprint), or the area is not expected to fully recover to preproject conditions within 1 year (i.e., annual grasslands in graded but revegetated areas). Covered Activities would temporarily disturb suitable BUOW habitat when the area is nongraded and revegetated (i.e., nongraded work areas), or the area is expected to fully recover to preproject conditions within 1 year (i.e., agricultural lands in graded but revegetated areas).Construction Covered Activities have the potential to harass or harm individual BUOW.

Several measures have been incorporated into construction Covered Activities to avoid and minimize these direct effects on both individual BUOW and its suitable habitat. Before implementing construction Covered Activities, environmentally sensitive areas (including suitable BUOW habitat) would be mapped to identify avoidance areas (AMM C-3) and worker environmental awareness training would be performed (AMM C-1) regarding species conservation measures. These AMMs would reduce direct effects on suitable BUOW habitat in the HCP Planning Area.

Other AMMs would be implemented to avoid direct harm and harassment of individual BUOW. These measures include restricting vehicle travel and speed (AMM C-4), prohibiting pets (AMM C-5), and implementing nesting bird avoidance (AMM C-2). Additional species-specific AMMs have been incorporated into the conservation strategy for this species (see Chapter 5, Conservation Strategy, Table 5-14, for a description of these measures).These measures entail conducting preconstruction surveys for BUOW (BO-1) , establishing exclusion areas around occupied burrows (BO-2), and relocating BUOW from occupied burrows that cannot be avoided (BO-3). These measures reduce the likelihood that individual BUOW would be directly affected.

Although these AMMs would avoid or minimize the potential for direct mortality or injury to BUOW, these direct effects could still occur. Construction Covered Activities have the potential to injure or kill BUOW in burrows or disrupt their foraging or sheltering in occupied burrows. Ground disturbance at facility footprints, graded work areas, and ungraded work areas could collapse active burrows or a vehicle could strike a BUOW, resulting in injury or death.

Indirect Effects

Suitable habitat for BUOW could be indirectly affected by construction Covered Activities later in time through the introduction of invasive plants, attraction of predators, increased public access and associated disturbance. Most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, as summarized below.

Introduction of Invasive Plants. Construction vehicles, equipment, and materials entering the HCP Planning Area may introduce invasive weed species that could modify or degrade the suitability of annual grasslands for BUOW. However, as described in Chapter 2, Covered Activities, construction AMMs include preparation and implementation of a noxious weed plan that is expected to control invasive plants in disturbed lands (AMM C-6) (Appendix C). The HCP assumes that this measure would effectively prevent or minimize this potential indirect effect.

Predator Attraction to Trash. Construction Covered Activities would generate trash that could increase the number of predators, such as coyotes, that could affect the BUOW population. Trash accumulation is expected to be minimized through daily trash removal (AMM 10). Thus, this potential indirect effect would be avoided.

Increased Public Access. The access roads created by construction Covered Activities could increase public access to the HCP Planning Area, which in turn could degrade BUOW habitat, and/or harm or kill BUOW through vehicles collapsing burrows or striking BUOW, harm and harassment by pets and increased pet access along the new roads, vegetation and soil disturbance, and facilitation of the spread of invasive plants. These effects would be minimized, however, by constructing locked gates on access roads (AMM C-11).

Therefore, indirect effects would not reduce the availability or suitability of habitat for BUOW, or result in harassment or harm of BUOW.

Operations and Maintenance Covered Activities

Planning and designing construction Covered Activities to avoid and minimize effects on BUOW habitat has also reduced the potential for effects during O&M Covered Activities by minimizing the amount of BUOW habitat potentially exposed to the O&M Covered Activities (see AMMs PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, not all potential effects of O&M Covered Activities on BUOW habitat have been avoided during planning and design. Nesting birds could be harassed or harmed, and BUOW habitat could be temporarily disturbed as a result of O&M Covered Activities.

Class 1 O&M Covered Activities, because they would be conducted entirely within the drivable surface of access roads, TSP/LST pads, or from aircraft, would not result in ground or vegetation disturbance and would have negligible effects, if any, on BUOW habitat or individual BUOW.

Class 2 O&M Covered Activities, which include major repairs, access road maintenance, and vegetation management, would involve ground and vegetation disturbance. Class 2 O&M Covered Activities would occur in facility footprints and the graded and ungraded work areas that were prepared during construction Covered Activities. As described in Chapter 2, they also may involve additional off-road travel routes and guard pole sites. Therefore, Class 2 O&M Covered Activities could harass or harm nesting BUOW, or directly degrade or modify BUOW habitat. O&M Covered Activities also could indirectly degrade or modify burrowing owl habitat by facilitating the spread of invasive plants or generating trash that attracts predators.

AMMs have been incorporated into O&M Covered Activities to avoid and minimize these direct and indirect effects (see Table 2-3). Most of these measures are equivalent to those proposed for construction Covered Activities, including the following:

- Conducting worker environmental awareness trainings (AMM O&M-2)
- Mapping environmentally sensitive areas (AMM O&M-3)
- Prohibiting pets (AMM O&M-8)
- Controlling the introduction and spread of invasive plants (AMM O&M-14)

O&M Covered Activities also include additional BMPs that would reduce the potential to disturb owls and their habitat, including the following:

- Using existing roads to the extent feasible (AMM O&M-6)
- Restricting off-road travel in the HCP Planning Area (AMM O&M-7)
- Revegetating temporarily disturbed areas (AMM O&M-12)

Species-specific AMMs to minimize and prevent impacts on BUOW have been included in the BUOW conservation strategy and are described in Chapter 5, Conservation Strategy (see Table 5-14).These measures include conducting preconstruction surveys (BO-1), establishing exclusion areas around occupied burrows (BO-2), and relocated BUOW from burrows that cannot be avoided (BO-3).

In addition, an Operation and Maintenance Environmental Compliance Plan would be prepared to provide guidelines for resource protection during O&M Covered Activities (AMM O&M-1); it would provide maps of sensitive resources and required buffers to be implemented within the HCP Planning Area. Furthermore, all O&M Covered Activities resulting in ground disturbance (i.e., Class 2 O&M Activities) must go through a SCE internal environmental screening process to determine avoidance and minimization requirements (AMM O&M-4). This screening process includes a preactivity survey (AMM O&M-5). If suitable habitat is present, sensitive areas would be marked and avoided and the O&M activity would be monitored by a biologist (AMM O&M-3).

O&M Covered Activities must sometimes be conducted under emergency conditions, however. Under emergency conditions, some AMMs may not be feasible, including but not limited to the environmental screening process and preactivity surveys. However, SCE maintains a biologist on call to support avoidance and minimization of biological resources during emergency activities.

Through implementing these measures, indirect effects of Class 2 O&M Covered Activities would be reduced. However, Class 2 O&M Covered Activities still could directly result in up to 17.62 acres of temporary disturbance to the annual grassland habitat of burrowing owl, and 2.85 acres of temporary disturbance of the agricultural land cover that also provides foraging opportunities (Table 4-12). Also, harassment, harm, or mortality of owls could still occur (particularly during emergency activities), although the likelihood of such an event has been reduced.

Summary of Effects on Burrowing Owl

In case BUOW becomes Federally listed, SCE is seeking take authorization for the removal of occupied habitat and the potential harassment, harm, mortality, and other forms of take of this species that may occur during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line’s transmission corridor. As summarized in Table 4-12, the effects of all Covered Activities on BUOW suitable habitat would not result in more than the following:

- Direct permanent effects on 40.96 acres of reproduction and foraging habitat and 2.33 acres of foraging habitat for BUOW
- Direct temporary effects on 52.40 acre reproduction and foraging habitat and 12.10 acres of foraging habitat for BUOW

Also, although implementation of AMMs would substantially reduce the likelihood of O&M and construction Covered Activities harming or harassing BUOW, as previously described, harm or harassment of BUOW may still occur. Impact acreages are used to quantify incidental take of BUOW in the HCP Planning Area by the Covered Activities. The acreage of impacts on suitable habitat is used as a proxy for quantifying the number of individuals harmed or harassed because determining the incidental take of BUOW individuals is indeterminable because harm and mortality of this burrow-dwelling bird would frequently occur underground where it may go undetected, and the number of individuals and/or eggs cannot be reliably determined. Also, the effects of harmful Covered Activities may be indistinguishable from other causes of harm.

Table 4-12
Impact Acreages for Burrowing Owl Suitable Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
Reproduction and Foraging[1]			
West of FKC	-	–	4.25
East of FKC	40.96	–	30.53
Total	40.96	–	34.78
Foraging[2]			
West of FKC	1.18	–	6.83
East of FKC	1.15	–	2.43
Total	2.33	–	9.26
O&M Period			
Reproduction and Foraging[1]			
West of FKC	–	–	0.94
East of FKC	–	–	16.68
Total	–	–	17.62
Foraging[2]			
West of FKC	–	–	1.51
East of FKC	–	–	1.33
Total	–	–	2.84

Notes: FKC = Friant-Kern Canal

[1] Reproduction and Foraging = annual grassland

[2] Foraging = field /row crop

Source: Data compiled by AECOM in 2013

4.3.1.10 SAN JOAQUIN KIT FOX

Introduction

The HCP Planning Area is within the range of the San Joaquin kit fox (SJKF), and the species has been observed close to the HCP Planning Area (CNDDB 2013). SJKF was not been observed in the HCP Planning Area during focused surveys, nor during monitoring conducted in for the Big Creek Rebuild Project (see Section 3.2.1.10). The HCP Planning Area contains 1,048 acres of annual grassland habitat that is considered suitable foraging, denning, and breeding habitat for SJKF. There are also approximately 324 acres of row crops, 1,423 acres of orchard, 57 acres of vineyards, 7 acres of vernal pools/swales, less than 1 acre of puddles, and almost 12 acres of stock ponds/basins that are not primary habitat for SJKF, but may provide movement and foraging opportunities (Tables 3-2, 3-4, and 3-5).

Although facilities have been sited to avoid suitable SJKF habitat to the maximum extent practicable, Covered Activities would eliminate prey habitat and SJKF breeding and foraging habitat in facility footprints because these areas would be permanently converted to nonhabitat. However, the HCP assumes that SJKF movement through the HCP Planning Area would not be impeded by constructed facilities.

Grading of work areas would modify and degrade suitable foraging and denning habitat for SJKF. Although annual grassland would be restored to a cover of annual grasses and forbs within 1 year of disturbance, Covered Activities in graded work areas could affect subsurface habitat elements and these impacts could persist for more than 12 months and this would be considered a permanent impact. Agricultural land cover disturbed by grading work areas would also be restored to agricultural use within 1 year; Covered Activities on agricultural land would not impact subsurface habitat elements for this species and thus grading of work areas in agricultural land cover would be considered a temporary impact.

Similarly, suitable habitat in nongraded work areas in annual grassland and agricultural land cover would remain in or be restored to this land cover type within 1 year. Therefore, because nongraded work areas would be revegetated, disturbance of SJKF habitat in nongraded work areas is temporary.

The effects of facility footprints on adjacent land cover would not convert adjacent land cover types providing suitable habitat to nonhabitat. This potential indirect effect and other direct and indirect effects on SJKF are discussed separately below for construction and O&M Covered Activities.

The HCP assumes that the facility footprints, graded work areas, and nongraded work areas would have no effect on adjacent land cover, and would not convert land cover types providing SJKF suitable habitat to nonhabitat. This potential indirect effect, other indirect effects, and direct effects on San Joaquin kit fox are discussed separately below for construction and O&M Covered Activities.

Construction Covered Activities

Direct Effects

Although the Cross Valley Line has been designed to avoid and minimize effects on Covered Species, including SJKF (see measures PD-1, PD-2, and PD-3 in Table 2-2), construction Covered Activities would result in permanent loss of up to 40.96 acres and temporary disturbance of 34.78 acres of annual grassland habitat that is suitable foraging, denning, and breeding habitat for SJKF (Table 4-13). More than 90 percent (71.49 acres) of this annual grassland habitat that would be affected is east of the Friant-Kern Canal. In addition, construction Covered Activities would also result in the permanent loss of 11.65 acres and temporary disturbance of 55.07 acres of agricultural lands and seasonally dry land cover types that provide foraging and movement habitat for SJKF habitat (Table 4-13).

Covered Activities would permanently eliminate suitable SJFK habitat when the area is maintained clear of vegetation (i.e., facility footprint) or the area is not expected to fully recover to preproject conditions within 1 year (i.e., annual grasslands in graded but revegetated areas). Covered Activities would temporarily disturb suitable

SJKF habitat when the area is nongraded and revegetated (i.e., nongraded work areas), or the area is expected to fully recover to preproject conditions within 1 year (i.e., agricultural lands in graded but revegetated areas).

Construction Covered Activities also have the potential to directly harass or harm (injure or kill) SJKF. However, several measures have been incorporated into construction Covered Activities to avoid or minimize these direct effects on both individual SJKF and its suitable habitat. Before implementing construction Covered Activities, environmentally sensitive areas (including suitable SJKF habitat) would be mapped to identify avoidance areas (AMM C-3) and worker environmental awareness training would be performed (AMM C-1) regarding species conservation measures. These AMMs would reduce direct effects on suitable SJKF habitat and lessen the likelihood that SJKF individuals would be directly affected in the HCP Planning Area.

Other AMMs would be implemented to avoid direct harm and harassment of individual SJKF. These measures include restricting vehicle travel and speed (AMM C-4) and prohibiting pets (AMM C-5). Additional species-specific AMMs have been incorporated into the conservation strategy for this species (see Chapter 5, Conservation Strategy, Table 5-14, for a description of these measures).These measures entail conducting preconstruction surveys for SJFK (SJKF-1) , establishing buffers around active SJFK dens (SJKF-2), covering excavated holes and trenches and visually inspecting these and open-ended pipes before each work day (SJKF-3 and SJKF-4), monitoring Covered Activities near active SJFK dens (SJKF-5), and restricting rodenticide use (SJKF-6). These measures reduce the likelihood that individual SJKF would be directly affected.

Although these AMMs would avoid and minimize the potential for direct mortality or injury (harm) to SJKF, these direct effects could still occur. Construction Covered Activities have the potential to injure or kill SJKF or disrupt their foraging or utilization of dens. Ground-disturbance at facility footprints, graded work areas, and ungraded work areas could collapse active dens or a construction vehicle could strike a SJKF, resulting in injury or death.

Indirect Effects

Suitable habitat for SJKF could be indirectly affected by construction Covered Activities through the introduction of invasive plants, attraction of predators, and increase in public access and associated disturbance. Most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, as summarized below.

Introduction of Invasive Plants. Construction vehicles, equipment, and materials entering the HCP Planning Area may introduce invasive weed species that could modify or degrade the suitability of annual grasslands for SJKF. However, as described in Chapter 2, Covered Activities, construction AMMs include preparation and implementation of a noxious weed plan that is expected to control invasive weeds in disturbed lands (AMM C-6) (Appendix C).

Predator Attraction to Trash. Construction Covered Activities would generate trash that could increase the number of predators, such as coyotes, that could affect the SJKF population. Trash accumulation is expected to be minimized through daily trash removal (AMM 10). Thus, this potential indirect effect would be avoided.

Increased Public Access. The access roads created by construction Covered Activities could increase public access to the HCP Planning Area, which in turn could degrade SJKF habitat, and/or harm or kill SJKF through vehicles collapsing burrows or striking SJKF, harm and harassment by pets and increased pet access along the new roads, vegetation and soil disturbance, and facilitation of the spread of invasive plants. These effects would be minimized, however, by constructing locked gates on access roads (AMM C-11).

Therefore, indirect effects would not reduce the availability or suitability of habitat for SJKF, or result in harassment or harm of SJKF.

Operations and Maintenance Covered Activities

Planning and designing construction Covered Activities to avoid and minimize effects on SJKF habitat has also reduced the potential for effects during O&M Covered Activities by minimizing the amount of SJKF habitat potentially exposed to O&M Covered Activities (see AMMs PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, not all potential effects of O&M Covered Activities on SJFK individuals and their habitat have been avoided during planning and design. Individual SJKF could be harassed or harmed, and SJKF habitat could be temporarily disturbed as a result of O&M Covered Activities.

Class 1 O&M Covered Activities, because they would be conducted by equipment and work crews operating entirely within the drivable surface of existing access roads, existing TSP/LST pads, or from aircraft, would not result in ground or vegetation disturbance. Also, Class 1 O&M Covered Activities would involve a limited number of vehicle trips with restrictions on vehicle speeds in at dawn and dusk and nighttime travel (see AMMs O&M-6 and O&M-7 in Table 2-3).Therefore, the HCP assumes that any effects of Class 1 Covered Activities to San Joaquin kit fox habitat or individuals would be insignificant and discountable.

Class 1 O&M Covered Activities, because they would be conducted entirely within the drivable surface of constructed access roads, constructed TSP/LST pads, or from aircraft, would not result in ground or vegetation disturbance, and therefore, would have a limited effect, if any, on SJKF suitable habitats. However, Class 1 O&M Covered Activities could directly harm SJKF if vehicles strike individual SJKF moving along or across the access roads. AMMs restricting vehicle access, speeds, and nighttime travel (AMMs O&M-6 and O&M-7) would reduce the likelihood of a vehicle killing a SJFK crossing an access road.

Class 2 O&M Covered Activities, which include major repairs, access road maintenance, and vegetation management, would involve ground and vegetation disturbance. Class 2 O&M Covered Activities would occur in facility footprints and the graded and ungraded work areas that were created during construction Covered Activities. As described in Chapter 2, they also may involve additional off-road travel routes and guard pole sites. Therefore, Class 2 O&M Covered Activities could harass or harm individual SJKF, or directly modify or degrade SJKF habitat. Class 2 O&M Covered Activities also could indirectly modify or degrade SJKF habitat by facilitating the spread of invasive plants or generating trash that attracts predators.

AMMs have been incorporated into O&M Covered Activities to avoid and minimize these direct and indirect effects (Table 2-3). Most of these O&M AMMs are equivalent to those proposed for construction Covered Activities (Table 2-2), including the following:

- Conducting worker environmental awareness trainings (AMM O&M-2)
- Mapping environmentally sensitive areas (AMM O&M-3)
- Prohibiting pets (AMM O&M-8)

- Restricting vehicle access (AMM O&M-6) and vehicle speeds and travel (AMM O&M-7)
- Removing trash (AMM O&M-13)
- Revegetating temporarily disturbed areas (AMM O&M-12)

As described above under SJFK Construction—Direct Effects, additional species-specific AMMs have been incorporated into the conservation strategy for this species (see Chapter 5, Conservation Strategy, Table 5-14, for a description of these measures).These measures entail conducting preconstruction surveys for SJFK (SJKF-1) , establishing buffers around active SJFK dens (SJKF-2), covering excavated holes and trenches and visually inspecting these and open-ended piped before each work day (SJKF-3 and SJKF-4), monitoring Covered Activities near active SJFK dens (SJKF-5), and restricting rodenticide use (SJKF-6). These measures reduce the likelihood that individual SJKF would be directly and indirectly affected by O&M Covered Activities.

In addition, an Operation and Maintenance Environmental Compliance Plan would be prepared to provide guidelines for resource protection during O&M Covered Activities (AMM O&M-1); it would provide maps of sensitive resources and required buffers to be implemented within the HCP Planning Area. Furthermore, all O&M Covered Activities resulting in ground disturbance (i.e., Class 2 O&M Activities) must go through a SCE internal environmental screening process to determine avoidance and minimization requirements (AMM O&M-4). This screening process includes a preactivity survey (AMM O&M-5). If suitable habitat is present, sensitive areas would be marked and avoided and the O&M activity would be monitored by a biologist (AMM O&M-3).

O&M Covered Activities must sometimes be conducted under emergency conditions, however. Under emergency conditions, some AMMs may not be feasible, including but not limited to the environmental screening process and preactivity surveys. However, SCE maintains a biologist on call to support avoidance and minimization of biological resources during emergency activities.

Through implementing these measures, indirect effects of Class 2 O&M Covered Activities would be reduced. However, Class 2 O&M Covered Activities still could directly result in up to 17.62 acres of temporary disturbance to the annual grassland that provides denning, foraging and movement habitat for SJKF, and 14.93 acres of temporary disturbance of the agricultural land cover that also provides foraging and movement opportunities for SJFK (Table 4-13). Also, harassment, harm, or mortality of SJKF could still occur although the likelihood of such an event has been reduced.

Summary of Effects on San Joaquin Kit Fox

SCE is seeking take authorization for the removal of suitable habitat and the potential harassment and harm from habitat modification to this species during the construction and future O&M of the Cross Valley Line and future O&M activities for the existing adjacent transmission line located in the north-south portion of the proposed Cross Valley Line's transmission corridor. As summarized in Table 4-13, the effects of all Covered Activities on SJKF not result in more than the following:

- Direct permanent effects on 40.96 acres of reproduction, denning, and foraging habitat and 11.65 acres of foraging and movement habitat for SJFK

- Direct temporary effects on 52.40 acre reproduction, denning, and foraging habitat and 70.00 acres of foraging and movement habitat for SJKF

Also, individual SJKFs are vulnerable to direct harassment, injury, and mortality during implementation of construction and O&M Covered Activities, particularly because they den underground. However, SCE's implementation of the planning and design, construction, O&M, and species-specific AMMs would effectively avoid harassment or harm of SJKF individuals utilizing the grassland land cover, avoiding and minimizing construction and O&M effects on individual SJKF.

Although protocol surveys of the HCP Planning Area did not detect SJKF, and measures would be implemented as part of Covered Activities and the conservation strategy for SJKF to avoid impacts, harassment or harm from habitat modification could still occur during the term of the ITP. Because is it not possible to determine the number of SJKF that may be harassed or harmed from habitat modification, the acreage of impacts on suitable habitat is used as a proxy for quantifying take.

Table 4-13
Impact Acreages for San Joaquin Kit Fox Suitable Habitat within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
Reproduction, Foraging, Movement[1]			
West of FKC	-	–	4.25
East of FKC	40.96	–	30.53
Total	40.96	–	34.78
Foraging, Movement[2]			
West of FKC	6.37	–	46.68
East of FKC	5.28	–	8.39
Total	11.65	–	55.07
O&M Period			
Reproduction, Foraging, Movement[1]			
West of FKC	–	–	0.94
East of FKC	–	–	16.68
Total	–	–	17.62
Foraging, Movement[2]			
West of FKC	–	–	10.35
East of FKC	–	–	4.58
Total	–	–	14.93

Notes: FKC = Friant-Kern Canal

[1] Reproduction, foraging, movement = annual grassland.

[2] Foraging, movement = field /row crops, orchards, and vineyards.

Source: Data compiled by AECOM in 2013

4.3.2 PLANT COVERED SPECIES

4.3.2.1 HOOVER'S SPURGE

Introduction

Hoover's spurge (HOSP) was not identified during focused vernal pool plant surveys conducted in 2010 and 2011 (Quad Knopf, 2011b); therefore, occupied habitat is not known in the HCP Planning Area (Quad Knopf, 2011b and 2011d). However, the HCP Planning Area contains designated critical habitat for this species (Units 7C and 7D; see USFWS 2006) (Figure 3-22). All suitable habitat for HOSP in the HCP Planning Area is located in these two units of designated critical habitat, which, by definition, contains primary constituent elements (PCEs). Therefore, potential modification of HOSP designated critical habitat is described in terms of the PCEs of the critical habitat (USFWS, 2009a).

The PCEs of this designated critical habitat are habitat components that include (1) landscape topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, surface-water in the depressional features, including swales connecting the vernal pools (described below), providing for dispersal and promoting hydroperiods of adequate length in the pools; (2) depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water, or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominantly annual native vernal-pool plant species, and typically exclude both native and nonnative upland plant species in all but the driest years (USFWS, 2009a). Existing manmade features and structures, such as buildings, roads, railroads, airports, runways, other paved areas, lawns, and other urban landscaped areas located within a Critical Habitat Unit do not contain one or more of the PCEs. Covered Activities limited to those areas, therefore, would not modify designated Critical Habitat unless they may affect the species and/ or PCEs in adjacent critical habitat (USFWS, 2009a).

Critical Habitat Units 7C and 7D contain the following PCEs for HOSP designated critical habitat: approximately 7 acres of vernal pools/swales and 978 acres of annual grassland, all east of the Friant-Kern Canal. Although facilities have been sited to avoid PCEs of designated critical habitat for HOSP wherever feasible, vernal pools/swales and of annual grasslands, both with constitute HOSP PCEs, would be permanently (both directly and indirectly) and temporarily affected by construction Covered Activities (Table 4-14).

In facility footprints and graded work areas, Covered Activities would eliminate the PCEs of designated critical habitat for HOSP because these areas would be permanently converted to nonhabitat. In contrast to graded work areas, the HCP assumes that Covered Activities occurring in nongraded work areas would disturb but not permanently eliminate PCEs. The HCP assumes that temporary laydown of vegetation and disturbance of the soil surface in the nongraded work areas may temporarily disturb, but may not permanently reduce or eliminate, the ecological functions of vernal pools/swales and their ability to provide habitat for HOSP in subsequent years. Similarly, nongraded work areas would disturb annual grassland in vernal pool/swale watersheds, but these work areas would remain in or be restored to this land cover type within 1 year.

In addition to permanently removing PCEs of designated critical habitat for HOSP within facility footprints and graded work areas, Covered Activities could modify or degrade PCEs in adjacent critical habitat through several mechanisms. As discussed below, most of these effects would be avoided or reduced by AMMs that are part of the Covered Activities and additional habitat-specific measures that are part of the HOSP conservation strategy. However, grading within the watersheds of vernal pools/swales would alter and could adversely affect their PCEs. Potential impacts on PCEs from Covered Activities and AMMs that would be taken to avoid or minimize impacts are discussed in more detail below.

Construction Covered Activities

The Cross Valley Line has been designed and planned to avoid and minimize effects on Covered Species, including HOSP designated critical habitat (see AMMs PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, not all potential effects of construction Covered Activities on this plant's designated critical habitat have been avoided during planning and design. Designated critical habitat for HOSP could be adversely modified as a result of construction Covered Activities. Construction Covered Activities could directly affect HOSP PCEs by eliminating 0.14 acre of vernal pools/swales through direct fill and grading and 7.69 acres of annual grassland through grading, and temporarily disturbing 0.14 acre of vernal pools/swales and 6.07 acres of annual grassland. Further, approximately 3.56 acres of vernal pools/swales in HOSP designated critical habitat could be indirectly affected by construction Covered Activities occurring within 250 feet of these. Table 4-14 summarizes potential direct and indirect effects of Covered Activities to this plant's designated critical habitat and PCEs, and these effects are described below.

Direct Effects

Several AMMs have been incorporated into construction Covered Activities to avoid and minimize direct effects on PCEs of HOSP designated critical habitat. In particular, before implementation of each construction Covered Activity, all HOSP designated critical habitat would be mapped as environmentally sensitive areas and delineated in the field by qualified SCE biologists (AMM C-3) and worker environmental awareness training would be performed (AMM C-1) regarding avoidance and minimization measures. These measures would reduce the likelihood of construction Covered Activities from directly eliminating or impairing HOSP PCEs through grading, or vehicles and/or equipment entering vernal pools/swales. Thus, the potential for adverse modification, either through permanent removal and/or temporary disturbance of PCEs, of HOSP designated critical habitat is reduced.

Habitat-specific measures to minimize and prevent impacts on vernal pools and their watersheds have also been included in the HOSP conservation strategy (see Chapter 5, Conservation Strategy, Table 5-14). These measures are similar to AMMs C-1 and C-3, which are incorporated into all construction Covered Activities, but are specific to vernal pool/swale land cover type. These habitat-specific AMMs include measures for marking and monitoring buffers (VP-1 and VP-2; see Table 5-14).

Although the above measures would avoid and minimize effects on HOSP designated critical habitat, the location of certain construction Covered Activities cannot be modified, and some HOSP PCEs would be directly affected. Construction Covered Activities would result in permanent direct loss of up to 0.14 acre of vernal pools/swales and 6.79 acres of surrounding annual grassland that are PCEs of HOSP designated critical habitat (Table 4-14).The permanent loss of PCEs of habitat includes those areas that would be permanently developed by construction Covered Activities (i.e., facility footprints), and, for vernal pools/swales, work areas that are graded during construction Covered Activities. During construction Covered Activities, work areas that would not be graded may temporarily disturb the functionality of up to 0.14 acre of vernal pools/swales and 6.07 acres of annual grasslands (Table 4-14).

Indirect Effects

Construction Covered Activities, that occur in facility footprints, graded work areas, and ungraded work areas that are located within 250 feet of vernal pools/swales, could indirectly affect HOSP PCEs provided by 3.56 acres of vernal pools/swales through several mechanisms: water quality degradation; facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; and alteration of the hydrology of vernal pools/swales and other aquatic features through modification or degradation of natural land cover in their watersheds. Most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, as summarized below.

Water Quality Degradation. Construction Covered Activities occurring within 250 feet of vernal pools/swales, which are one HOSP PCE, may indirectly modify or degrade habitat later in time through water quality degradation that may result from the inadvertent release of toxins, such as fuels, lubricants, or solvents; or from increased erosion and deposition of sediment. However, as described in Chapter 2, Covered Activities, water quality BMPs would be implemented during construction Covered Activities to avoid and minimize this effect. Specifically, the fueling and maintenance of vehicles would be restricted within 250 feet of a waterway (AMM C-8) and erosion would be controlled near waterways, vernal pools, and vernal swales (AMM C-9). The HCP assumes that these two AMMs would fully avoid adverse effects on the water quality of vernal pools/swales that could otherwise occur through inadvertent release of toxins, such as fuels, lubricants or solvents, or increased deposition of sediment.

Introduction of Invasive Plants. Construction Covered Activities could facilitate the spread of invasive nonnative plants by introducing their seed from other sites on vehicles and construction equipment. Although weedy or invasive plants cannot colonize the bottoms of vernal pools, dense colonization of invasive plants in uplands adjacent to the vernal pools can reduce habitat quality by changing the vernal pool’s existing hydrological regime. However, as described in Chapter 2, Covered Activities, measures for controlling invasive plants in disturbed lands would be implemented as part of a weed control plan prepared for the Cross Valley Line and the HCP (AMM C-6) (see Appendix C). The HCP assumes that these measures would effectively prevent or minimize this potential indirect effect.

Increased Public Access. The access roads created by construction Covered Activities could increase public access to the HCP Planning Area, which in turn could degrade designated critical habitat for HOSP habitat and degrade or modify vernal pools/swales and associated grasslands (i.e., HOSP PCEs) through disturbing vegetation and soil, reducing water quality, and facilitating the spread of invasive plants. The HCP assumes that these effects would be effectively avoided by installing locked gates on access roads (AMM C-11).

Hydrological Modification. Construction Covered Activities occurring within 250 feet of vernal pools/swales may also indirectly affect HOSP PCEs by altering the adjacent uplands supporting the hydrologic regime of the vernal pools/swales. The surface or subsurface hydrological connections that support the an aquatic feature’s existing hydrological regime can be altered, thus changing the timing of water filling and drying, water depth, and water duration in the aquatic feature. The HCP assumes that grading activities occurring within 250 feet of vernal pools/swales can alter their hydrology and degrade or remove HOSP PCEs.

Operations and Maintenance Activities

Planning and designing construction Covered Activities to avoid and minimize effects on HOSP designated critical habitat has also reduced the potential for effects during implementation of O&M Activities by minimizing the amount of designated critical habitat potentially exposed to O&M Covered Activities. Nonetheless, not all potential effects of O&M Covered Activities on HOSP designated critical habitat have been avoided during construction planning and design. Approximately 0.08 acre of vernal pools/swales and 3.32 acres of associated annual grassland, both HOSP PCEs, could be temporarily disturbed during O&M Covered Activities (Table 4-14).

Class 1 O&M Covered Activities, because they would be conducted entirely by SCE work crews and equipment operating within the drivable surface of constructed access roads, constructed TSP/LST pads, or from aircraft, would not result in new ground or vegetation disturbance and would have negligible effects, if any, on HOSP designated critical habitat located in the HCP Planning Area (Table 3-5).

Class 2 O&M Covered Activities, which include major repairs, road maintenance, and vegetation management, would involve ground disturbance. Most Class 2 O&M Covered Activities would occur in existing facility footprints and in the existing graded work areas created during construction Covered Activities. However, some O&M Covered Activities may involve additional off-road travel routes and guard pole sites (see Table 2-3). Therefore, Class 2 O&M Covered Activities could further modify or degrade PCEs of HOSP designated critical habitat located within the HCP Planning Area.

Land disturbance from O&M Covered Activities could indirectly affect HOSP designated critical habitat by affecting water quality and facilitating the spread of invasive plants. AMMs have been incorporated into O&M Covered Activities to avoid and minimize these direct and indirect effects. Most of these measures are equivalent to those proposed for construction Covered Activities, including the following:

- Conducting worker environmental awareness trainings (AMM O&M-2)
- Mapping environmentally sensitive areas (AMM O&M-3)
- Controlling the introduction and spread of invasive plants (AMM O&M-14)
- Staying on existing roads to the greatest extent possible (AMM O&M-6)
- Restricting off-road travel outside of work areas (AMM O&M-7)
- Revegetating temporarily disturbed upland areas (AMM O&M-12)
- Restricting fueling and maintenance of vehicles would be restricted within 250 feet of a waterway (AMM O&M-9)
- Controlling erosion near waterways (AMM O&M-10)

Habitat-specific AMMs to minimize and prevent impacts on vernal pools and their watersheds have also been included in the HOSP conservation strategy and are described in Chapter 5, Conservation Strategy, Table 5-14.

These habitat-specific AMMs include measures for marking and monitoring minimum 250-foot buffers around suitable VPFS habitat (measures VP-1 and VP-2) (see Table 5-14).

In addition, an Operation and Maintenance Environmental Compliance Plan would be prepared to provide guidelines for resource protection during O&M Covered Activities (AMM O&M-1); it would provide maps of sensitive resources and HCP required buffers to be implemented within the HCP Planning Area. Furthermore, all O&M Covered Activities resulting in ground disturbance (i.e., Class 2 O&M Activities) must go through a SCE internal environmental screening process to determine avoidance and minimization requirements (AMM O&M-4). This screening process includes a preactivity survey (AMM O&M-5). If designated critical habitat is present, all areas providing PCEs would be marked and avoided and the O&M activity would be monitored by a biologist (AMM O&M-3).

O&M Covered Activities must sometimes be conducted under emergency conditions, however. Under emergency conditions, some measures may not be feasible, including but not limited to the environmental screening process and preactivity surveys. However, SCE maintains a biologist on call to support avoidance and minimization of biological resources during emergency activities.

Through implementing these measures, most indirect effects of Class 2 O&M Covered Activities on PCEs of HOSP designated critical habitat would be reduced. However, after implementation of these AMMs, O&M Covered Activities could result in temporary disturbance to 0.08 acre of vernal pools/swales and 3.32 acres of annual grassland (Table 4-14), which are PCEs for HOSP designated critical habitat in Units 7C and 7D.

Summary of Effects on Hoover's Spurge

As summarized in Table 4-14, the effects of all Covered Activities on HOSP designated critical habitat would not result in more than the following:

- Direct permanent effects on 0.14 acre of vernal pools/swales and 7.69 acres of associated annual grasslands, both PCEs for HOSP designated critical habitat
- Direct temporary effects on 0.22 acre of vernal pools/swales and 9.39 acres of associated annual grasslands, both PCEs for HOSP designated critical habitat
- Indirect permanent effects on 3.56 acres of vernal pools/swales, a PCE for HOSP designated critical habitat

Table 4-14 Impact Acreages for Hoover's Spurge Suitable Habitat within the Habitat Conservation Plan Planning Area			
Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
Vernal Pools/Swales[1]			
West of FKC	–	–	–
East of FKC	0.14	3.56	0.14
Total	0.14	3.56	0.14
Annual Grassland[1,2]			
West of FKC	–	–	–
East of FKC	7.69	–	6.07
Total	7.69	–	6.07
O&M Period			
Vernal Pools/Swales[1]			
West of FKC	–	–	–
East of FKC	–	–	0.08
Total	–	–	0.08
Annual Grassland[1,2]			
West of FKC	–	–	–
East of FKC	–	–	3.32
Total	–	–	3.32

Notes: FKC = Friant-Kern Canal

[1] Primary constituent elements of designated critical habitat of Hoover's spurge.

[2] Annual grassland within 250 feet of vernal pool/swale

Source: Data compiled by AECOM in 2013

4.3.2.2 San Joaquin Valley Orcutt Grass

Introduction

San Joaquin Valley Orcutt grass (SJVOG) was not identified during focused plant surveys conducted in 2010 and 2011 (Quad Knopf, 2011b); therefore, occupied habitat does not occur in the HCP Planning Area. However, the HCP Planning area contains designated critical habitat for this species (Unit 6; see USFWS and NMFS, 1996). All suitable habitat for SJVOG in the HCP Planning Area is located in this unit of designated critical habitat, which, by definition, contains PCEs. These PCEs are similar to those described for HOSP designated critical habitat in Section 4.3.2.1 Potential modification to SJVOG designated critical habitat is described in terms of their effects on the PCEs of its critical habitat (USFWS and NMFS, 1996).

Critical Habitat Unit 6 contains the following PCEs for SJVOG designated critical habitat: approximately 7 acres of vernal pools/swales and 978 acres of annual grassland, all east of the Friant-Kern Canal. Although facilities have been sited to avoid PCEs of designated critical habitat for HOSP wherever feasible, vernal pools/swales and of annual grasslands, both with constitute HOSP PCEs, would be permanently (both directly and indirectly) and temporarily affected by construction Covered Activities (Table 4-15). The effects of facility footprints, graded work areas, and nongraded work areas on SJVOG designated critical habitat would be similar to those described for HOSP designated critical habitat in Section 4.3.2.1. Potential impacts on PCEs from Covered Activities and AMMs that would be taken to avoid or minimize impacts are discussed in more detail below.

Construction Covered Activities

The Cross Valley Line has been designed and planned to avoid and minimize effects on Covered Species, including SJVOG designated critical habitat (see AMMs PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, not all potential effects of construction Covered Activities on this plant's designated critical habitat have been avoided during planning and design. Designated critical habitat for SJVOG could be adversely modified as a result of construction Covered Activities. Construction Covered Activities could directly affect SJVOG PCEs by eliminating 0.14 acre of vernal pools/swales through direct fill and grading and 7.69 acres of annual grassland through grading, and temporarily disturbing 0.14 acre of vernal pools/swales and 6.07 acres of annual grassland. Further, approximately 3.56 acres of vernal pools/swales in SJVOG designated critical habitat could be indirectly affected by construction Covered Activities occurring within 250 feet of these. Table 4-15 summarizes potential direct and indirect effects of Covered Activities to this plant's designated critical habitat and PCEs, and these effects are described below.

Direct Effects

Several AMMs have been incorporated into construction Covered Activities to avoid and minimize direct effects on PCEs of SJVOG designated critical habitat. These AMMs are similar to those described for HOSP designated critical habitat, including: AMMs, C-1 (mapping and delineating environmentally sensitive areas) and C-3 (conducting worker environmental awareness training). Similarly, habitat-specific measures to minimize and prevent impacts on vernal pools and their watersheds have also been included in the SJVOG conservation strategy (see Chapter 5, Conservation Strategy, Table 5-14), including marking and monitoring buffers around vernal pools/swales (VP-1 and VP-2).

Although the above measures would avoid and minimize effects on SJVOG designated critical habitat, the location of certain construction Covered Activities cannot be modified, and some SJVOG PCEs would be directly affected. Construction Covered Activities would result in permanent direct loss of up to 0.14 acre of vernal pools/swales and 7.69 acres of surrounding annual grassland that are PCEs of HOSP designated critical habitat (Table 4-15).The permanent loss of PCEs of habitat includes those areas that would be permanently developed by construction Covered Activities (i.e., facility footprints), and, for vernal pools/swales, work areas that are graded during construction Covered Activities. During construction Covered Activities, work areas that would not be graded may temporarily disturb the functionality of up to 0.14 acre of vernal pools/swales and 6.07 acres of annual grasslands (Table 4-15).

Indirect Effects

Construction Covered Activities, that occur in facility footprints, graded work areas, and ungraded work areas that are located within 250 feet of vernal pools/swales, could indirectly affect SJVOG PCEs provided by 3.56 acres of vernal pools/swales through several mechanisms: water quality degradation; facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; and alteration of the hydrology of vernal pools/swales and other aquatic features through modification or degradation of natural land cover in their watersheds. As described above for HOSP designated critical habitat (Section 4.3.2.1), most of these indirect effects are expected to be fully avoided through the implementation of the following construction AMMs: C-6 (implementing a weed control plan); C-8 (restricting fueling and maintenance near waterways); C-9 (controlling erosion near waterways); and C-11 (restricting public access). However, construction Covered Activities occurring within 250 feet of vernal pools/swales may indirectly affect SJVOG PCEs by altering the adjacent uplands supporting the hydrologic regime of the vernal pools/swales.

Operations and Maintenance Activities

Planning and designing construction Covered Activities to avoid and minimize effects on SJVOG designated critical habitat has also reduced the potential for effects during implementation of O&M Activities by minimizing the amount of designated critical habitat potentially exposed to O&M Covered Activities. Nonetheless, not all potential effects of O&M Covered Activities on SJVOG designated critical habitat have been avoided during construction planning and design. Approximately 0.08 acre of vernal pools/swales and 3.32 acres of associated annual grassland, both HOSP PCEs, could be temporarily disturbed during O&M Covered Activities (Table 4-14).

The mechanisms of indirect effects, and the AMMs to avoid and minimize these effects, on SJVOG designated critical habitat resulting from O&M Covered Activities would be similar to those described for HOSP designated critical habitat (see Section 4.3.2.1). Through implementing these measures, most indirect effects of Class 2 O&M Covered Activities on PCEs of SJVOG designated critical habitat would be reduced. However, after implementation of these AMMs, O&M Covered Activities could result in temporary disturbance to 0.03 acre of vernal pools/swales and 9.44 acres of annual grassland (Table 4-15), which are PCEs for SJVOG designated critical habitat in Unit 6.

Summary of Effects on San Joaquin Valley Orcutt Grass

As summarized in Table 4-15, the effects of all Covered Activities on HOSP designated critical habitat would not result in more than the following:

- Direct permanent effects on 0.14 acre of vernal pools/swales and 7.69 acres of associated annual grasslands, both PCEs for SJVOG designated critical habitat
- Direct temporary effects on 0.22 acre of vernal pools/swales and 9.39 acres of associated annual grasslands, both PCEs for SJVOG designated critical habitat
- Indirect permanent effects on 3.56 acres of vernal pools/swales, a PCE for SJVOG designated critical habitat

Table 4-15 **Impact Acreages for San Joaquin Valley Orcutt Grass Suitable Habitat within the Habitat Conservation Plan Planning Area**			
Portion of HCP Planning Area	**Permanent**		**Temporary**
	Direct	**Indirect**	
Construction Period			
Vernal Pools/Swales[1]			
West of FKC	–	–	–
East of FKC	0.14	3.56	0.14
Total	0.14	3.56	0.14
Annual Grassland[1,2]			
West of FKC	–	–	–
East of FKC	7.69	–	6.07
Total	7.69	–	6.07
O&M Period			
Vernal Pools/Swales[1]			
West of FKC	–	–	–
East of FKC	–	–	0.08
Total	–	–	0.08
Annual Grassland[1,2]			
West of FKC	–	–	–
East of FKC	–	–	3.32
Total	–	–	3.32

Notes: FKC = Friant-Kern Canal

[1] Primary constituent elements of designated critical habitat of Hoover's spurge.

[2] Annual grassland within 250 feet of vernal pool/swale

Source: Data compiled by AECOM in 2013

4.3.2.3 SPINY-SEPALED BUTTON-CELERY

Introduction

Spiny-sepaled button-celery (SSBC) was identified during focused plant surveys conducted in 2010 and 2011; therefore, occupied habitat exists in the HCP Planning Area (Figure 3-24). Although this species was previously listed as a Candidate species, it is not currently Federally listed or State listed (Section 3.2.2.3), it is listed by CNPS as 1B.2 (rare, threatened, or endangered in California and elsewhere), and there is a reasonable chance that it could be listed during the term of the ITP. This species occurs in vernal pools and swales and adjacent grasslands, and occasionally in roadside ditches, and depressions. Forty-six populations of this plant encompassing 21.62 acres were found within the eastern portion of the HCP Planning Area (Figure 3-24). The distribution of these populations did not correspond to a land cover type or combination of land cover types within the HCP Planning Area. Therefore, the 36.85 acres of occupied habitat east of the Friant-Kern Canal was considered to represent suitable habitat for this analysis.

In facility footprints and graded work areas, Covered Activities would eliminate SSBC occupied habitat because these areas would be permanently converted to nonhabitat. In contrast to graded work areas, the HCP assumes that Covered Activities occurring in nongraded work areas would disturb, but not permanently eliminate occupied habitat. The HCP assumes that temporary laydown of vegetation and disturbance of the soil surface in the nongraded work areas may temporarily disturb, but would not permanently reduce or eliminate, the ecological functions of vernal pools/swales and other aquatic habitats and their ability to provide habitat for SSBC in subsequent years.

In addition to permanently removing SSBC occupied habitat within facility footprints and graded work areas, Covered Activities could modify or degrade occupied habitat through several mechanisms. As discussed below, most of these effects would be avoided or reduced by AMMs that are part of the Covered Activities and additional habitat-specific measures that are part of the SSBC conservation strategy. Potential impacts on SSBC occupied habitat from Covered Activities and AMMs that would be taken to avoid or minimize impacts are discussed in more detail below.

Construction Covered Activities

The Cross Valley Line has been designed and planned to avoid and minimize effects on Covered Species, including SSBC occupied habitat (see AMMs PD-1, PD-2, and PD-3 in Table 2-2). Nonetheless, not all potential effects of construction Covered Activities on this plant’s occupied habitat have been avoided during planning and design. Construction Covered Activities could directly affect SSBC occupied habitat by eliminating 1.20 acre of occupied habitat through direct fill and grading, and temporarily disturbing 0.80 acre of occupied habitat. Further, approximately 4.58 acres of SSBC occupied habitat could be indirectly affected by construction Covered Activities occurring within 250 feet of aquatic features. Table 4-16 summarizes potential direct and indirect effects of Covered Activities to this plant’s occupied habitat, and these effects are described below.

Direct Effects

Several AMMs have been incorporated into construction Covered Activities to avoid and minimize direct effects on SSBC occupied habitat. In particular, before implementation of each construction Covered Activity, all SSBC occupied habitat would be mapped as environmentally sensitive areas and delineated in the field by qualified SCE biologists (AMM C-3) and worker environmental awareness training would be performed (AMM C-1) regarding avoidance and minimization measures. These measures would reduce the likelihood of construction Covered Activities directly eliminating or impairing SSBC occupied habitat through grading, or vehicles and/or equipment entering its habitat. Thus, the potential for permanent removal and/or temporary disturbance of SSBC occupied habitat is reduced.

Habitat-specific measures to minimize and prevent impacts on vernal pools and their watersheds have also been included in the SSBC conservation strategy (see Chapter 5, Conservation Strategy, Table 5-14). These measures are similar to AMMs C-1 and C-3, which are incorporated into all construction Covered Activities, but are specific to vernal pool/swale land cover type. These habitat-specific AMMs include measures for marking and monitoring buffers (VP-1 and VP-2; see Table 5-14).

Although the above measures would avoid and minimize effects on SSBC occupied habitat, the location of certain construction Covered Activities cannot be modified, and some SSBC occupied habitat would be directly affected. Construction Covered Activities would result in permanent direct loss of up to 1.20 acres of SSBC occupied habitat (Table 4-16).The permanent loss of habitat includes those areas that would be permanently developed by construction Covered Activities (i.e., facility footprints), or graded during construction Covered Activities. During construction Covered Activities, work areas that would not be graded may temporarily disturb up to 0.80 acre of SSBC occupied habitat (Table 4-16).

Indirect Effects

Construction Covered Activities, that occur in facility footprints, graded work areas, and ungraded work areas that are located within 250 feet of vernal pools/swales, could indirectly affect 4.58 acres of SSBC occupied habitat through several mechanisms: water quality degradation; facilitation of the spread of invasive plants; increase in public access to the HCP Planning Area and, thus, increase in associated disturbance; and alteration of the hydrology of vernal pools/swales and other aquatic features through modification or degradation of natural land cover in their watersheds. Most of these indirect effects are expected to be fully avoided through the implementation of construction AMMs, as summarized below.

Water Quality Degradation. Construction Covered Activities occurring within 250 feet of vernal pools/swales and other SSBC occupied habitat may indirectly modify or degrade habitat later in time through water quality degradation that may result from the inadvertent release of toxins, such as fuels, lubricants, or solvents; or from increased erosion and deposition of sediment. However, as described in Chapter 2, Covered Activities, water quality BMPs would be implemented during construction Covered Activities to avoid and minimize this effect. Specifically, the fueling and maintenance of vehicles would be restricted within 250 feet of a waterway (AMM C-8) and erosion would be controlled near waterways, vernal pools, and vernal swales (AMM C-9). The HCP assumes that these two AMMs would fully avoid adverse effects on the water quality of vernal pools/swales that could otherwise occur through inadvertent release of toxins, such as fuels, lubricants or solvents, or increased deposition of sediment.

Introduction of Invasive Plants. Construction Covered Activities could facilitate the spread of invasive nonnative plants by introducing their seed from other sites on vehicles and construction equipment. Although weedy or invasive plants cannot colonize the bottoms of vernal pools, dense colonization of invasive plants in uplands adjacent to the vernal pools can reduce habitat quality by changing the vernal pool's existing hydrological regime. However, as described in Chapter 2, Covered Activities, measures for controlling invasive plants in disturbed lands would be implemented as part of a weed control plan prepared for the Cross Valley Line and the HCP (AMM C-6) (see Appendix C). The HCP assumes that these measures would effectively prevent or minimize this potential indirect effect.

Increased Public Access. The access roads created by construction Covered Activities could increase public access to the HCP Planning Area, which in turn could degrade SSBC occupied habitat through disturbing vegetation and soil, reducing water quality, and facilitating the spread of invasive plants. The HCP assumes that these effects would be effectively avoided by installing locked gates on access roads (AMM C-11).

Hydrological Modification. Construction Covered Activities occurring within 250 feet of vernal pools/swales and other SSBC occupied habitat may also indirectly affect occupied habitat by altering the adjacent uplands supporting the hydrologic regime of the vernal pools/swales. The surface or subsurface hydrological connections that support the an aquatic feature's existing hydrological regime can be altered, thus changing the timing of water filling and drying, water depth, and water duration in the aquatic feature. The HCP assumes that grading activities occurring within 250 feet of vernal pools/swales could alter their hydrology and degrade or remove SSBC occupied habitat.

Operations and Maintenance Activities

Planning and designing construction Covered Activities to avoid and minimize effects on SSBC occupied habitat has also reduced the potential for effects during implementation of O&M Activities by minimizing the amount of occupied habitat potentially exposed to O&M Covered Activities. Nonetheless, not all potential effects of O&M Covered Activities on SSBC occupied habitat have been avoided during construction planning and design. Approximately 0.08 acre of SSBC occupied habitat, could be temporarily disturbed during O&M Covered Activities (Table 4-14).

Class 1 O&M Covered Activities, because they would be conducted entirely by SCE work crews and equipment operating within the drivable surface of constructed access roads, constructed TSP/LST pads, or from aircraft, would not result in new ground or vegetation disturbance and would have negligible effects, if any, on SSBC occupied habitat located in the HCP Planning Area (Table 3-5).

Class 2 O&M Covered Activities, which include major repairs, road maintenance, and vegetation management, would involve ground disturbance. Most Class 2 O&M Covered Activities would occur in existing facility footprints and in the existing graded work areas created during construction Covered Activities. However, some O&M Covered Activities may involve additional off-road travel routes and guard pole sites (see Table 2-3). Therefore, Class 2 O&M Covered Activities could further modify or degrade SSBC occupied habitat located within the HCP Planning Area.

Land disturbance from O&M Covered Activities could indirectly affect SSBC occupied habitat by affecting water quality and facilitating the spread of invasive plants. AMMs have been incorporated into O&M Covered Activities to avoid and minimize these direct and indirect effects. Most of these measures are equivalent to those proposed for construction Covered Activities, including the following:

- Conducting worker environmental awareness trainings (AMM O&M-2)
- Mapping environmentally sensitive areas (AMM O&M-3)
- Controlling the introduction and spread of invasive plants (AMM O&M-14)
- Staying on existing roads to the greatest extent possible (AMM O&M-6)
- Restricting off-road travel outside of work areas (AMM O&M-7)
- Revegetating temporarily disturbed upland areas (AMM O&M-12)
- Restricting fueling and maintenance of vehicles would be restricted within 250 feet of a waterway (AMM O&M-9)

- Controlling erosion near waterways (AMM O&M-10)

Habitat-specific AMMs to minimize and prevent impacts on vernal pools and their watersheds have also been included in the SSBC conservation strategy and are described in Chapter 5, Conservation Strategy, Table 5-14. These habitat-specific AMMs include measures for marking and monitoring minimum 250-foot buffers around suitable VPFS habitat (measures VP-1 and VP-2) (see Table 5-14).

A species-specific AMM is included in the SSBC conservation strategy. This AMM, SSBC-1, restricts the use of herbicide, which could be used during O&M Covered Activities, to areas at least 100 feet outside of SSBC occupied habitat.

In addition, an Operation and Maintenance Environmental Compliance Plan would be prepared to provide guidelines for resource protection during O&M Covered Activities (AMM O&M-1); it would provide maps of sensitive resources and HCP required buffers to be implemented within the HCP Planning Area. Furthermore, all O&M Covered Activities resulting in ground disturbance (i.e., Class 2 O&M Activities) must go through a SCE internal environmental screening process to determine avoidance and minimization requirements (AMM O&M-4). This screening process includes a preactivity survey (AMM O&M-5). If occupied habitat is present, all areas would be marked and avoided and the O&M activity would be monitored by a biologist (AMM O&M-3).

O&M Covered Activities must sometimes be conducted under emergency conditions, however. Under emergency conditions, some measures may not be feasible, including but not limited to the environmental screening process and preactivity surveys. However, SCE maintains a biologist on call to support avoidance and minimization of biological resources during emergency activities.

Through implementing these measures, most indirect effects of Class 2 O&M Covered Activities on SSBC occupied habitat would be reduced. However, after implementation of these AMMs, O&M Covered Activities could result in temporary disturbance to 0.08 acre of SSBC occupied habitat (Table 4-16).

Table 4-16
Impact Acreages for Habitat Occupied by Spiny-Sepaled Button-Celery within the Habitat Conservation Plan Planning Area

Portion of HCP Planning Area	Permanent		Temporary
	Direct	Indirect	
Construction Period			
Total Occupied Habitat	1.20	4.58	0.80
O&M Period			
Total Occupied Habitat	–	–	0.08

Note: FKC = Friant-Kern Canal

Source: Data compiled by AECOM in 2013

Summary of Effects on Spiny-Sepaled Button-Celery

As summarized in Table 4-16, the effects of all Covered Activities on SSBC occupied habitat would not result in more than the following:

- Direct permanent effects on 1.20 acres of SSBC occupied habitat
- Direct temporary effects on 0.88 acre of SSBC occupied habitat
- Indirect permanent effects on 4.58 acres of SSBC occupied habitat

5 CONSERVATION STRATEGY

5.1 INTRODUCTION

For each Covered Species, this chapter provides biological goals and objectives, a set of measures that constitutes this habitat conservation plan's (HCP's) minimization and mitigation approach for the species, and a rationale for the approach to minimization and mitigation.

In the context of HCPs, biological goals form the guiding principle behind the operating conservation program. Biological goals are the rationale behind the HCP's minimization and mitigation approach, and should support species recovery goals. For more complex HCPs, biological measurable objectives can be used to step down the biological goals into manageable, and therefore, more understandable units. HCPs that are smaller in scope would have simpler biological goals that may not need to be stepped down into objectives (65 Fed. Reg. 35242). This HCP does not step down its biological goals into objectives.

The biological goals of the Cross Valley Line HCP are commensurate with the specific impacts and the duration of the Covered Activities. To support the persistence of Covered Species in the HCP Planning Area and their regional conservation, this HCP has three overarching goals:

1. Help to maintain viable populations of each Covered Species within the HCP Planning Area over the 30-year incidental take permit (ITP) term.

2. Help to conserve the amount and quality of Covered Species habitat existing within the HCP Planning Area over the 30-year ITP term.

3. Contribute to local and/or regional conservation of each Covered Species and its habitat to fully compensate for unavoidable impacts resulting from implementation of construction and operations and maintenance (O&M) Covered Activities.

Southern California Edison (SCE) would achieve HCP Biological Goals #1 and Goal #2 by implementing the construction and the O&M avoidance and minimization measures (AMMs; see Chapter 2). In addition, SCE would achieve HCP Biological Goals #1 and Goal #2 by implementing species- and habitat-specific AMMs (described below in Section 5.3, Summary of Avoidance, Minimization, and Mitigation, and summarized in Table 5-14) when any HCP Covered Activity is implemented within suitable habitat for that Covered Species. By avoiding and minimizing impacts on Covered Species and their suitable habitat over the proposed ITP term, SCE would help conserve the existing quality of species habitat within the HCP Planning Area, and would help maintain species populations presently occupying the HCP Planning Area.

HCP Biological Goal #3 would compensate for unavoidable effects on species and species habitat resulting from the implementation of the construction and O&M Covered Activities. As discussed below in Section 5.3, SCE would achieve HCP Biological Goal #3 by implementing one or more methods to preserve high-quality species habitat in perpetuity. For example, SCE may preserve occupied species habitat by acquiring acceptable lands in fee-title (acquire the title to the property), or by permanently protecting land through a conservation-easement purchase, which would preclude other uses on the site besides conservation activities in perpetuity. This would constitute the acquisition of a "turnkey" or "permittee responsible" mitigation site. SCE would then arrange for approved or certified land-management entities to manage the lands as species habitat in perpetuity (e.g., a "turnkey" mitigation preserve) (see Section 5.3). Alternatively, SCE may purchase "credits" for habitat already preserved and managed as habitat at a U.S. Fish and Wildlife Service (USFWS)–approved conservation bank (see Section 5.3). Finally, SCE may meet HCP Biological Goal #3 by implementing a combination these mitigation options: acquiring the fee-title of a site to preserve it in perpetuity, purchasing a conservation easement on a site to preserve habitat in perpetuity, and purchasing habitat mitigation credits at a USFWS-approved conservation bank(s). If SCE decides to acquire preserve lands through conservation easement or fee title, SCE would provide a title report, title record, and an acceptable land management plan for the property prior to USFWS issuance of an ITP. The amount of land preservation needed to achieve HCP Biological Goal #3 is further discussed below in Section 5.2, Species Conservation Strategies.

In Section 5.2 the three HCP biological goals are "stepped down" into three similar Biological Goals for each of the 13 Covered Species. These species-specific Biological Goals correspond to the three overall conservation goals of this HCP presented here in Section 5.1.

5.2 SPECIES CONSERVATION STRATEGIES

This section provides biological goals and a conservation strategy for each Covered Species. Each Covered Species has three biological goals that match the three overall goals of this HCP. Each species conservation strategy consists of a set of both AMMs and mitigation that would be implemented to attain the three species-specific biological goals. These AMMs and mitigation are listed in a table, and the text provides a supporting rationale.

The species conservation strategies provide mitigation for impacts on Covered Species and affected suitable habitat. The conservation strategy mitigates all of the impacts described in Chapter 4, including direct, indirect, temporary, and permanent impacts. The species conservation strategies would also indirectly contribute to species recovery through the protection of natural communities and species habitat. Together, the species conservation strategies would achieve the three broad HCP Biological Goals listed above in Section 5.1.

5.2.1 VERNAL POOL FAIRY SHRIMP (VPFS)

5.2.1.1 VPFS Biological Goals

- VPFS Goal 1: Avoid and minimize direct and indirect impacts on VPFS and its suitable habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable populations of VPFS within the HCP Planning Area over the 30-year ITP term.

- VPFS Goal 2: Avoid and minimize impacts on VPFS and its suitable habitat resulting from O&M Covered Activities to the maximum extent practicable in order to conserve the quality of existing VPFS habitat and help to maintain viable populations of VPFS in the HCP Planning Area over the 30-year ITP term.

- VPFS Goal 3: Contribute to local and/or regional conservation of VPFS and its suitable habitat by preserving a minimum of 14.86 acres of high-quality vernal pools known to be occupied by VPFS.

5.2.1.2 VPFS Conservation Strategy

As described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on Covered Species, including VPFS and its suitable habitat. These planning-design measures contribute to the VPFS conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as VPFS and its suitable habitat, that should be considered and further evaluated. This effort provided the baseline for developing the VPFS conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for VPFS (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable populations of VPFS in the HCP Planning Area.

- Designing roads to avoid sediment loading to surface waterways, such as vernal pools/swales (AMM PD-3), helped to minimize indirect effects on VPFS suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitats for VPFS. These efforts benefit VPFS populations in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on this invertebrate's habitat have been avoided during planning and design. SCE would conduct construction and O&M Covered Activities in the vicinity of vernal pools/swales, puddles, and stock ponds/basins, all of which support suitable habitat for VPFS. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit VPFS. These AMMs are described in Chapter 2, Covered Activities (Tables 2-2 and 2-4).

Additional species-specific AMMs are incorporated into this species' conservation strategy. During implementation of construction and Class 2 O&M Covered Activities, vernal pools/swales, puddles, and stock ponds/basins, all of which are suitable habitat for VPFS, would be avoided to the maximum extent practicable through a marked and monitored minimum 250-foot buffer (VP-1 and VP-2; see also Table 5-14). These habitat-specific AMMs would maintain the existing hydrological integrity of VPFS suitable habitat located within the HCP Planning Area. Thus, the existing habitat quality for VPFS in the HCP Planning Area would be maintained during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support VPFS Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the habitat-specific conservation measures (i.e., VP-1 and VP-2) are a comprehensive, integrated set of measures designed to conserve viable VPFS populations and the existing quality of VPFS suitable habitat within SCE's ROW and the HCP Planning Area, and achieve VPFS Biological Goals #1 and #2. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term and meet the requirements of VPFS Biological Goals #1 and #2. As summarized below and in Table 5-1, these VPFS AMMs avoid or minimize direct and indirect impacts on suitable habitat for VPFS that would result from implementing construction and O&M Covered Activities, to meet VPFS Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Species Population.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, VP-1, and VP2-), through habitat avoidance, contribute to both to HCP Biological Goals #1 and #2 and VPFS Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for VPFS (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable populations of VPFS in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), including vernal pools, puddles, and stock ponds/basins that are VPFS suitable habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Further, establishing a 250-foot-wide buffer zone around vernal pool/swale habitat while implementing Class 2 O&M Covered Activities (AMM VP-1) maintains habitat quality for VPFS in the HCP Planning Area. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on VPFS in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on VPFS and its suitable habitat. Preconstruction surveys, compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), and monitoring of ground-disturbing activities near vernal pool/swale habitat (AMM VP-2) ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent habitat for listed invertebrates, including VPFS.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically, C-1, C-4, C-6, C-8, C-9, C-11, O&M-2, O&M-6, O&M-7, O&M-9, O&M-10, O&M-12, and O&M-14) minimize direct and indirect effects on VPFS suitable habitat, thereby meeting the HCP and VPFS Biological Goal of maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify VPFS suitable habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3). Restricting Covered Activities in and around VPFS suitable habitat (e.g., no fueling or maintenance of vehicles within 250 of aquatic features [AMMs C-8 and O&M-9], implementing erosion control measures near aquatic features [AMMs C-9 and O&M-10], and staying on existing roads [AMM O&M-6]) maintains the quality of VPFS suitable habitat in the HCP Planning Area and would meet HCP and VPFS Biological Goals #1 and #2. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), controlling weeds (AMMs C-6 and O&M-14), and revegetating disturbed areas (AMM O&M-12), minimize indirect effects on VPFS suitable habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area, and would meet HCP and VPFS Biological Goals #1 and #2.

By implementing measures in Table 5-1 during construction and O&M Covered Activities, VPFS suitable habitat would be avoided to the maximum extent practicable; thus, two of the three biological goals of the VPFS conservation strategy (VPFS Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented during O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on VPFS suitable habitat. Several AMMs may not be feasible under emergency conditions, including, but not limited to, pre-activity surveys (O&M-5). SCE would maintain a biologist on-call to support habitat avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where VPFS suitable habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing habitat conditions would be maintained in most VPFS suitable habitat in the HCP Planning Area through the implementation of planning-design, construction, O&M, and habitat-specific AMMs (see Table 5-1), some VPFS suitable habitat cannot be avoided and would be permanently lost or temporarily disturbed as a result of implementing Covered Activities. VPFS Biological Goal #3 would be met through the acquisition of vernal pool/swale habitat mitigation that would offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM VP-3 in Table 5-14 and additional detail in Table 5-15). VPFS Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 14.86 acres of vernal pool habitat at a USFWS-approved conservation bank(s).
- Preserve in perpetuity 14.86 acres of vernal pool habitat occupied by VPFS through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved "turnkey" land management entity.
- Use a combination of the above options to mitigate unavoidable impacts on VPFS to the maximum extent practicable.

The preservation of vernal pool/swale habitat would permanently protect high-quality occupied habitat for VPFS in perpetuity. This vernal pool habitat preservation acreage would benefit the species by increasing the total amount of occupied habitat that is protected in perpetuity on a local and regional scale. The compensatory mitigation would also be of higher conservation value that the VPFS suitable habitat that is affected in the HCP Planning Area because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This compensatory mitigation would contribute towards the local and regional conservation of VPFS and its habitat.

Temporary disturbance of VPFS habitat, direct loss of individuals, permanent direct loss of VPFS habitat, and disturbance of lands within the watershed supporting VPFS habitat in the HCP Planning Area would be mitigated by preserving of better quality VPFS habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property.

The VPFS AMMs would restrict the potential for indirect effects to alter watersheds that support existing hydrology for vernal pools. Because the transmission line facilities being proposed in the HCP Planning Area are generally narrow and linear, they would have relatively little intersection with existing watersheds for vernal pools and other habitats suitable for VPFS. In addition, a portion of the total 5.11 acres of affected suitable habitat for VPFS is in actively managed and frequently disturbed locations, such as roadside puddles and basins/stock ponds, or in predominantly agricultural and/or developed landscapes that are less likely to support VPFS (see Chapter 4). All 14.86 acres of mitigation land would be of greater value habitat for VPFS because the mitigation acreage would be located in relatively undisturbed vernal pool/grassland natural landscapes that are known to support VPFS. Therefore, through this compensatory mitigation, VPFS Biological Goal #3 would be attained (see Table 5-1).

Table 5-1 summarizes the VPFS AMMs and mitigation that constitute the HCP's VPFS conservation strategy. By fulfilling the biological goals for this species, the Cross Valley Line would support the persistence of VPFS in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-1
Summary of Conservation Strategy for Vernal Pool Fairy Shrimp[1]

Biological Goal	Applicable Measures
VPFS Goal 1: Avoid and minimize impacts on vernal pool fairy shrimp and its habitat during construction Covered Activities to the maximum extent practicable	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources PD-3 Design Roads to Avoid Sediment Loading to Surface Waterways C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-6 Implement Noxious Weed and Invasive Plant Control Plan C-8 Restrict Equipment Fueling and Maintenance near Waterways C-9 Control Erosion Near Waterways and Suitable Habitat for Covered Species C-11 Construct Locking Gates at Strategic Locations on Access Roads VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat
VPFS Goal 2: Avoid and minimize impacts on vernal pool fairy shrimp and its habitat for during O&M Covered Activities to the maximum extent practicable	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-9 Restrict Equipment Fueling and Maintenance near Waterways O&M-10 Control Erosion near Waterways and Suitable Habitat for Covered Species O&M-12 Revegetate Temporarily Disturbed Areas O&M-14 Prepare and Implement Noxious Weed and Invasive Plant Control Plan
VPFS Goal 3: Compensate for loss of habitat for vernal pool fairy shrimp during Covered Construction and O&M Activities.	VP-3 Mitigate Unavoidable Impacts on Vernal Pool/Swale Habitat

Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; VP = vernal pool; VPFS = vernal pool fairy shrimp

[1] Text of construction and O&M AMMs is located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Compiled by AECOM in 2013

5.2.2 VERNAL POOL TADPOLE SHRIMP (VPTS)

5.2.2.1 VPTS Biological Goals

- VPTS Goal 1: Avoid and minimize direct and indirect impacts on VPTS and its habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable populations of VPTS within the HCP Planning Area over the 30-year ITP term.

- VPTS Goal 2: Avoid and minimize impacts on VPTS and its habitat resulting from O&M Covered Activities to the maximum extent practicable in order to conserve the quality of existing VPTS habitat and help to maintain viable populations of VPTS in the HCP Planning Area over the 30-year ITP term.

- VPTS Goal 3: Contribute to local and/or regional conservation of VPTS and its habitat by preserving a minimum of 14.40 acres of high-quality vernal pools known to be occupied by VPTS.

5.2.2.2 VPTS Conservation Strategy

As described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on Covered Species, including VPTS and its suitable habitat. These planning-design measures contribute to the VPTS conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as VPTS and its suitable habitat, that should be considered and further evaluated. This effort provided the baseline for developing the VPTS conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for VPTS (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable populations of VPTS in the HCP Planning Area.

- Designing roads to avoid sediment loading to surface waterways, such as vernal pools/swales (AMM PD-3), minimizes indirect effects on VPTS suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitats for VPTS. These efforts benefit VPTS populations in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on this invertebrate’s habitat have been avoided during planning and design. SCE would conduct construction and O&M Covered Activities in the vicinity of vernal pools/swales and stock ponds/basins, all of which support suitable habitat for VPTS. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit VPTS (see Tables 2-2 and 2-4).

Additional species-specific AMMs are incorporated into this species’ conservation strategy. During implementation of construction and Class 2 O&M Covered Activities, vernal pools/swales and stock ponds/basins, all of which are suitable habitat for VPTS, would be avoided to the maximum extent practicable through a marked and monitored minimum 250-foot buffer (VP-1 and VP-2; see also Table 5-14). These habitat-specific AMMs would maintain the existing hydrological integrity of VPTS suitable habitat located within the HCP Planning Area. Thus, the existing habitat quality for VPTS in the HCP Planning Area would be maintained during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support VPTS Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the habitat-specific conservation measures (i.e., VP-1 and VP-2) are a comprehensive, integrated set of measures designed to conserve viable VPTS populations and the existing quality of VPTS suitable habitat within SCE's ROW and the HCP Planning Area, and achieve VPTS Biological Goals #1 and #2. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-2, these AMMs avoid or minimize direct and indirect impacts on suitable habitat for VPTS that would result from implementing construction and O&M Covered Activities, to meet VPFS Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Species Population.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, VP-1, and VP-2), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and VPFS Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for VPTS (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable populations of VPTS in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), including vernal pools and stock ponds/basins that are VPTS suitable habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Further, establishing a 250-foot-wide buffer zone around vernal pool/swale habitat while implementing Class 2 O&M Covered Activities (AMM VP-1) maintains habitat quality for VPTS in the HCP Planning Area. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on VPTS in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on VPTS and its suitable habitat. Preconstruction surveys, compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), and monitoring of ground-disturbing activities in natural vegetation near vernal pool/swale habitat (AMM VP-2) ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent habitat for listed invertebrates, including VPTS.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-6, C-8, C-9, C-11, O&M-2, O&M-6, O&M-7, O&M-9, O&M-10, O&M-12, and O&M-14) minimize direct and indirect effects on VPTS suitable habitat, thereby meeting the HCP and VPFS Biological Goal of maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify VPTS suitable habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3). Restricting Covered Activities in and around VPTS suitable habitat (e.g., no fueling or maintenance of vehicles within 250 of aquatic features [AMMs C-8 and O&M-9], implementing erosion control measures near aquatic features [AMMs C-9 and O&M-10], and staying on existing roads [AMM O&M-6]) maintains the quality of VPTS suitable habitat in the HCP Planning Area and would meet HCP and VPFS Biological Goals #1 and #2. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and

O&M-7), controlling weeds (AMMs C-6 and O&M-14), and revegetating disturbed areas (AMM O&M-12), minimize indirect effects on VPTS suitable habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area, and would meet HCP and VPFS Biological Goals #1 and #2.

By implementing measures in Table 5-2 during construction and O&M Covered Activities, VPTS suitable habitat would be avoided to the maximum extent practicable; thus, two of the three VPTS Biological Goals (#1 and #2) of the VPTS conservation strategy would be achieved.

Several of these measures can be implemented during O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on VPTS suitable habitat. Several AMMs may not be feasible under emergency conditions, including, but not limited to, pre-activity surveys (O&M-5). SCE would maintain a biologist on-call to support habitat avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where VPTS suitable habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing habitat conditions would be maintained in most VPTS suitable habitat in the HCP Planning Area through the implementation of planning-design, construction, O&M, and habitat-specific AMMs (see Table 5-2), some VPTS suitable habitat cannot be avoided and would be permanently lost or temporarily disturbed as a result of implementing Covered Activities. VPTS Biological Goal #3 would be met through the acquisition of vernal pool/swale habitat mitigation that would offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM VP-3 in Table 5-14 and additional detail in Table 5-15). VPTS Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 14.40 acres of vernal pool habitat at a USFWS-approved conservation bank(s).
- Preserve in perpetuity 14.40 acres of vernal pool habitat occupied by VPTS through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved “turnkey” land management entity.
- Use a combination of the above options to mitigate unavoidable impacts on VPTS to the maximum extent practicable.

The preservation of vernal pool/swale habitat would permanently protect high-quality occupied habitat for VPTS in perpetuity. Compensatory mitigation would include permanently protected and occupied habitat for VPTS. This vernal pool habitat preservation acreage would benefit the species by increasing the amount of occupied habitat that is protected in perpetuity on a local and regional scale. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This compensatory mitigation would contribute towards the local and regional conservation of VPTS and its habitat.

Temporary disturbance of VPTS habitat, loss of individuals, permanent direct loss of VPTS habitat, and disturbance of lands within the watershed supporting VPTS habitat in the HCP Planning Area would be mitigated by preserving better quality VPTS habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property.

The VPTS AMMs would restrict the potential for indirect effects to alter watersheds that support existing hydrology for vernal pools. Because the transmission line facilities being proposed in the HCP Planning Area are generally narrow and linear, they would have relatively little intersection with existing watersheds for vernal pools and other habitats suitable for VPTS. In addition, a portion of the total 4.94 acres affected suitable habitat for VPTS is in actively managed and frequently disturbed locations, such as basins/stock ponds, or in predominantly agricultural and/or developed landscapes that are less likely to support VPTS. All 14.40 aces of mitigation land would be of greater value habitat for VPTS than these marginal habitats that would be affected because the mitigation acreage would be located in relatively undisturbed landscapes of natural vegetation that are known to support VPTS. Therefore, through this compensatory mitigation, VPTS Biological Goal #3 would be attained (Table 5-2).

Table 5-2 summarizes the VPTS AMMs and mitigation that constitute the HCP's VPTS conservation strategy. By fulfilling the biological goals for this species, the Cross Valley Line would support the persistence of VPTS in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-2
Summary of Conservation Strategy for Vernal Pool Tadpole Shrimp[1]

Biological Goal	Applicable Measures
VPTS Goal 1: Avoid and minimize impacts on vernal pool tadpole shrimp and its habitat during construction Covered Activities to the maximum extent practicable	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources PD-3 Design Roads to Avoid Sediment Loading to Surface Waterways C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-6 Implement Noxious Weed and Invasive Plant Control Plan C-8 Restrict Equipment Fueling and Maintenance near Waterways C-9 Control Erosion Near Waterways and Suitable Habitat for Covered Species C-11 Construct Locking Gates at Strategic Locations on Access Roads VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat
VPTS Goal 2: Avoid and minimize impacts on vernal pool tadpole shrimp and its habitat during O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-9 Restrict Equipment Fueling and Maintenance near Waterways

Table 5-2 Summary of Conservation Strategy for Vernal Pool Tadpole Shrimp[1]	
Biological Goal	**Applicable Measures**
	O&M-10 Control Erosion near Waterways and Suitable Habitat for Covered Species O&M-12 Revegetate Temporarily Disturbed Areas O&M-14 Prepare and Implement Noxious Weed and Invasive Plant Control Plan VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat
VPTS Goal 3: Contribute to regional conservation of vernal pool tadpole shrimp to compensate for impacts resulting from construction and O&M Covered Activities.	VP-3 Mitigate Unavoidable Impacts on Vernal Pool Habitat/Swale

Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; VP = vernal pool; VPTS = vernal pool tadpole shrimp

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.3 VALLEY ELDERBERRY LONGHORN BEETLE (VELB)

- VELB Goal 1: Avoid and minimize direct and indirect impacts on VELB and its habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable populations of VELB within the HCP Planning Area over the 30-year ITP term.
- VELB Goal 2: Avoid and minimize impacts on VELB and its habitat resulting from O&M Covered Activities to the maximum extent practicable in order to conserve VELB habitat and help to maintain viable populations of VELB in the HCP Planning Area over the 30-year ITP term.
- VELB Goal 3: Contribute to local and/or regional conservation of VELB habitat by mitigating any elderberry shrubs that would be affected according to USFWS guidelines (USFWS, 1999).

5.2.3.1 VELB Conservation Strategy

As described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on VELB habitat. These planning-design measures contribute to the VELB conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as VELB and its suitable habitat, that should be considered and further evaluated. This effort provided the baseline for developing the VELB conservation strategy.
- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for VELB

(than would otherwise have occurred without this avoidance design) and, thus, maintaining viable populations of VELB in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitats for VELB. These efforts benefit VELB populations in the HCP Planning Area during the 30-year ITP term, and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on VELB habitat have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of elderberry shrubs that support suitable habitat for VELB. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit VELB (see Tables 2-2 and 2-4).

Additional species-specific AMMs have been included in this species' conservation strategy. During construction and Class 2 O&M Covered Activities, elderberry shrubs, which are the only habitat for VELB, would be avoided to the maximum extent practicable, with a marked buffer (VELB-1; see also Table 5-14). This measure would reduce the likelihood of construction and O&M Covered Activities from eliminating or impairing the vitality of elderberries through project-related grading, vegetation trimming, or vehicles and/or equipment entering the protected zones. Thus, the existing habitat for VELB would be maintained during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support VELB Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the species-specific conservation measures (i.e., VELB-1) are a comprehensive, integrated set of measures designed to conserve the existing VELB suitable habitat within SCE's ROW and the HCP Planning Area, and achieve VELB Biological Goals #1 and #2. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-3, these AMMs avoid or minimize direct and indirect impacts on suitable habitat for VELB that would result from implementing construction and O&M Covered Activities.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Species Population.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, and VELB-1), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and VELB Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for VELB (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable populations of VELB in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), including individual elderberry shrubs as well as riparian habitats that may contain elderberry shrubs (i.e., suitable VELB habitat), guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Further, establishing a 100-foot-wide buffer zone around VELB habitat while implementing Class 2 O&M Covered Activities (AMM VELB-1) maintains habitat quality for VELB in the HCP Planning Area. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on VELB in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on VELB and its suitable habitat. Preconstruction surveys and compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent VELB habitat.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-6, C-11, O&M-2, O&M-6, O&M-7, O&M-12, and O&M-14) minimize direct and indirect effects on VELB suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify VELB habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3), and includes a discussion of potential habitat for VELB in the vicinity of the work area based on habitat mapping. Staying on existing roads [AMM O&M-6]) maintains the quality of VELB suitable habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), controlling weeds (AMMs C-6 and O&M-14), and revegetating disturbed areas (AMM O&M-12), minimize indirect effects on VELB suitable habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.

By implementing measures in Table 5-3 during construction and O&M Covered Activities, VELB suitable habitat would be avoided to the maximum extent practicable; thus, two of the three biological goals of the VELB conservation strategy (VELB Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented during O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on VELB suitable habitat. Several AMMs may not be feasible under emergency conditions, including, but not limited to, pre-activity surveys (O&M-5). SCE would maintain a biologist on-call to support avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where suitable VELB habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although direct and indirect effects on existing elderberry shrubs would be substantially avoided and reduced by the implementation of design, construction, O&M, and species-specific AMMs (see Table 5-3), some elderberry shrubs would be permanently lost or permanently and/or temporarily disturbed as a result of implementing Covered Activities. VELB Biological Goal #3 would be provided through the acquisition of suitable habitat that can accommodate for elderberry transplants and compensatory elderberry seedlings and associated native plantings, as determined by the VELB Conservation Guidelines (USFWS, 1999). This would mitigate for all permanent loss of VELB habitat (see AMM VELB-3 in Table 5-14 and additional detail in Table 5-15). Compensatory mitigation for VELB would be satisfied through one of the following:

- Purchase VELB mitigation credits, as determined by the VELB Conservation Guidelines (USFWS, 1999), at a USFWS-approved conservation bank(s). The SCE-preferred bank is French Camp Conservation Bank.

- Preserve in perpetuity VELB habitat, consisting of elderberry transplants and compensatory elderberry seedlings and associated native plantings, as determined by the VELB Conservation Guidelines (USFWS, 1999), through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved "turnkey" land management entity.

- Use a combination of the above options to mitigate unavoidable impacts on VELB.

VELB Biological Goal #3 would include permanently protected habitat for VELB. This compensatory mitigation would benefit the species by increasing the amount of local or regional VELB habitat that is protected in perpetuity. The compensatory mitigation would also be of higher conservation value than the of impacted habitat inside the HCP Planning Area because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This mitigation would contribute towards the regional conservation of VELB and its habitat.

Loss of individuals and permanent direct loss of VELB habitat in the HCP Planning Area would be mitigated by preserving better quality VELB habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through a USFWS-approved "turnkey" mitigation property. Therefore, through this compensatory mitigation, the third VELB biological goal would be attained (see Table 5-3).

Table 5-3 summarizes the VELB AMMs and mitigation that constitute the VELB conservation strategy within the HCP Planning Area. By fulfilling the biological goals for this species the Cross Valley Line would support the persistence of VELB in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-3
Summary of Conservation Strategy for Valley Elderberry Longhorn Beetle[1]

Biological Goal	Applicable Measures
VELB Goal 1: Avoid and minimize impacts on valley elderberry longhorn beetle and its habitat during construction Covered Activities to the maximum extent practicable	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources PD-3 Design Roads to Avoid Sediment Loading to Surface Waterways C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-6 Implement Noxious Weed and Invasive Plant Control Plan C-11 Construct Locking Gates at Strategic Locations on Access Roads VELB-1 Mark and Avoid Buffer Areas around Elderberries
VELB Goal 2: Avoid and minimize impacts on valley elderberry longhorn beetle and its habitat during O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-12 Revegetate Temporarily Disturbed Areas O&M-14 Prepare and Implement Noxious Weed and Invasive Plant Control Plan
VELB Goal 3: Contribute to regional conservation of valley elderberry longhorn beetle to compensate for impacts resulting from construction and O&M Covered Activities.	VELB-2 Mitigate Unavoidable Impacts on Elderberries

Table 5-3 Summary of Conservation Strategy for Valley Elderberry Longhorn Beetle[1]	
Biological Goal	**Applicable Measures**
Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; VELB = valley elderberry longhorn beetle [1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14. Source: Data compiled by AECOM in 2013	

5.2.4 CALIFORNIA TIGER SALAMANDER (CTS)

5.2.4.1 CTS Biological Goals

- CTS Goal 1: Avoid and minimize direct and indirect impacts on CTS and its suitable habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable populations of CTS within the HCP Planning Area over the 30-year ITP term.

- CTS Goal 2: Avoid and minimize impacts on CTS and its suitable habitat resulting from O&M Covered Activities to the maximum extent practicable in order to conserve the quality of existing CTS habitat and help to maintain viable populations of CTS in the HCP Planning Area over the 30-year ITP term.

- CTS Goal 3: Contribute to local and/or regional conservation of CTS and its habitat by preserving a minimum of 14.40 acres of high-quality vernal pools known to be occupied by CTS and preserving a minimum of 202.23 acres of suitable upland refugia habitat.

5.2.4.2 CTS Conservation Strategy

As described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on Covered Species, including CTS and its suitable habitat. These planning-design measures contribute to the CTS conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as CTS and its suitable habitats, that should be considered and further evaluated. This effort provided the baseline for developing the CTS conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for CTS (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable populations of CTS in the HCP Planning Area.

- Designing roads to avoid sediment loading to surface waterways, such as vernal pools/swales and stock ponds/basins (AMM PD-3), minimizes indirect effects on CTS suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitats for CTS. These efforts benefit CTS populations in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on this amphibian's habitat have been avoided during planning and design. SCE would conduct construction and O&M Covered Activities in the vicinity of vernal pools/swales, stock ponds/basins, annual grassland, and agricultural lands (i.e., row/field crops, vineyards, orchards), all of which support suitable habitat for CTS. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit CTS (see Tables 2-2 and 2-4).

Additional AMMs are incorporated into this species' conservation strategy. During implementation of construction and Class 2 O&M Covered Activities, vernal pools/swales, stock ponds/basins, annual grassland, and agricultural lands (e.g., row/field crops, vineyards, orchards), all of which are suitable habitat for CTS, would be avoided to the maximum extent practicable through a marked and monitored minimum 250-foot buffer (VP-1 and VP-2; see also Table 5-14). These habitat-specific AMMs would maintain the existing hydrological integrity of CTS suitable habitat located within the HCP Planning Area. Thus, the existing habitat quality for CTS in the HCP Planning Area would be maintained during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support CTS Biological Goal #1.

In addition to the habitat-specific measures described above, species-specific measures are incorporated into the CTS conservation strategy. During implementation of construction and Class 2 O&M Covered Activities where these occur in CTS suitable habitat (i.e., within 1.24 miles of suitable breeding habitat of CTS), pre-activity CTS clearance surveys would be conducted (CTS-1), excavated holes or trenches would be covered overnight and inspected for trapped salamanders prior to filling (CTS-2), the use of monofilament netting would be prohibited to prevent CTS entanglement (CTS-3), and burrow complexes would be flagged for avoidance (CTS-4) (see also Table 5-14). These species-specific AMMs would avoid and minimize harm, injury, and mortality to CTS that may otherwise result from implementing Covered Activities.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities, the habitat-specific conservation measures (i.e., VP-1 and VP-2), and the species-specific measures (i.e., CTS-1, CTS-2, CTS-3, and CTS-4) are a comprehensive, integrated set of measures designed to conserve CTS populations and the existing quality of CTS suitable habitat within SCE's ROW and the HCP Planning Area, and achieve CTS Biological Goals #1 and #2. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-4, these AMMs avoid or minimize direct and indirect impacts on CTS and it suitable habitat that would result from implementing construction and O&M Covered Activities.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Species Population.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, VP-1, and VP-2), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and CTS Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for CTS (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable populations of CTS in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), including vernal pools and stock ponds/basins and annual grasslands and agricultural lands that are within 1.24 miles of these, that are CTS suitable habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing

Covered Activities. Further, establishing a 250-foot-wide buffer zone around vernal pool/swale habitat while implementing Class 2 O&M Covered Activities (AMM VP-1) maintains habitat and water quality for CTS in the HCP Planning Area and conserves the existing hydrological integrity of vernal pools/swales and stock ponds/basins during implementation of Covered Activities. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on CTS in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on CTS and its suitable habitat. Preconstruction surveys, compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), and monitoring of ground-disturbing activities in annual grasslands near vernal pool/swale habitat (AMM VP-2) ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent habitat for CTS.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-6, C-8, C-9, C-11, O&M-2, O&M-6, O&M-7, O&M-9, O&M-10, O&M-12, and O&M-14) minimize direct and indirect effects on CTS suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provides information to SCE and SCE contract workers to teach them identify CTS suitable habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3). Restricting Covered Activities in and around CTS suitable habitat (e.g., no fueling or maintenance of vehicles within 250 of aquatic features [AMMs C-8 and O&M-9], implementing erosion control measures near aquatic features [AMMs C-9 and O&M-10], and staying on existing roads [AMM O&M-6]) maintains the quality of CTS suitable habitat in the HCP Planning Area. AMM CTS-1, which prohibits the use monofilament netting that could entangle and harm of kill CTS, would avoid and minimize harm, injury, and mortality to this species while conducting erosion control measures in suitable CTS habitat (i.e., within 1.24 miles of suitable CTS breeding habitat). Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), controlling weeds (AMMs C-6 and O&M-14), and revegetating disturbed areas (AMM O&M-12), minimize indirect effects on CTS suitable habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.

- **Minimization Measures to Reduce Risk of Harm, Injury, and Mortality to Species.** Several AMMs (specifically, CTS-1, CTS-2, CTS-3, and CTS-4) minimize the risk of harm, injury, and mortality to CTS, thereby maintaining viable populations of CTS in the HCP Planning Area. Prior to implementing construction and Class 2 O&M Covered Activities within 1.24 miles of CTS suitable breeding habitat[1], a monitor would conduct a daily check (i.e., prior to the start of work) for CTS under all materials and equipment that has been stored over-night and that would be used that day (CTS-1), following the agency requirements (USFWS and CDFG, 2003). To prevent inadvertent entrapment of CTS during construction or Class 2 O&M Covered Activities, trenches and holes would be covered over-night and inspected for trapped CTS before they are filled (CTS-2) and monofilament netting would be prohibited (CTS-3). If CTS are present within the work area, they would be allowed to leave on their own volition (CTS-1) or be relocated by a USFWS-approved biologist (CTS-2). Further, ground squirrel and gopher burrow complexes with 1.24 miles of suitable CTS breeding habitat would be flagged and delineated by SCE or its biological monitor for avoidance during

[1] The 1.24-mile (2-kilometer) distance is based on the observed mobility of the species (USFWS and CDFG, 2003) and includes annual grassland (for CTS aestivation and foraging) and agricultural land cover types (for CTS movement.

ground-disturbing Covered Activities in order to minimize potential disturbance to CTS. These additional species-specific AMMs would benefit individual adult and juvenile CTS.

By implementing measures in Table 5-4 during construction and O&M Covered Activities, CTS suitable habitat would be avoided to the maximum extent practicable, and direct and indirect impacts on CTS avoided and minimized, and the potential for the continued existence of CTS in the HCP Planning Area is increased; thus, the two of the three biological goals of the CTS conservation strategy (CTS Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented during O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on CTS suitable habitat. Several AMMs may not be feasible under emergency conditions, including, but not limited to, pre-activity surveys (O&M-5). SCE would maintain a biologist on-call to support habitat avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where CTS suitable habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing habitat conditions would be maintained in most CTS suitable habitat in the HCP Planning Area through the implementation of planning design, construction, O&M, and species-specific AMMs (Table 5-4), some CTS suitable habitat cannot be avoided and would be permanently lost or temporarily disturbed as a result of implementing Covered Activities. CTS Biological Goal #3 would be provided through the acquisition of CTS mitigation habitat, including breeding habitat and aestivation habitat, that would offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM CTS-5 in Table 5-14 and additional detail in Table 5-15). CTS Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 216.63 acres of CTS breeding and aestivation habitat at a USFWS-approved conservation bank(s).
- Preserve in perpetuity 216.63 acres of breeding and aestivation habitat occupied by CTS through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved "turnkey" land management entity.
- Use a combination of the above options to mitigate unavoidable impacts on CTS to the maximum extent practicable.

The preservation of CTS breeding and aestivation habitat would permanently protect high-quality occupied habitat for CTS in perpetuity. Compensatory mitigation would include permanently protected and occupied habitat for CTS. This compensatory mitigation acreage would benefit the species by increasing the amount of occupied habitat that is protected in perpetuity on a local and regional scale. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This compensatory mitigation would contribute towards the local and regional conservation of CTS and its habitat.

Temporary disturbance of habitat, loss of individuals, permanent direct loss of CTS habitat, and disturbance of lands within the watershed supporting CTS habitat in the HCP Planning Area would be mitigated by preserving better quality CTS habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property.

The CTS AMMs would restrict the potential for indirect effects to alter watersheds that support existing hydrology for vernal pools. Because the transmission line facilities being proposed in the HCP Planning Area are generally narrow and linear, they would have relatively little intersection with existing watersheds for vernal pools and other habitats suitable for CTS. In addition, a portion of the 4.94 acres of affected breeding habitat, 93.36 acres of affected aestivation and foraging habitat, and 81.65 acres of affected movement habitat for CTS is in actively managed and frequently disturbed locations, such as basins/stock ponds, or in predominantly agricultural and/or developed landscapes that are less likely to support CTS. All 216.63 acres of mitigation land would be of greater value habitat for CTS than these marginal habitats that would be affected because the mitigation acreage would be located in relatively undisturbed landscapes of natural vegetation that are known to support CTS. Therefore, through this compensatory mitigation, the CTS Biological Goal #3 would be attained (Table 5-4).

Table 5-4 summarizes the CTS AMMs and mitigation that constitute the CTS conservation strategy. By fulfilling the biological goals for this species, the Cross Valley Line would support the persistence of CTS in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-4
Summary of Conservation Strategy for California Tiger Salamander[1]

Biological Goal	Applicable Measures
CTS Goal 1: Avoid and minimize impacts on California tiger salamander and its habitat during construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources PD-3 Design Roads to Avoid Sediment Loading to Surface Waterways C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-6 Implement Noxious Weed and Invasive Plant Control Plan C-8 Restrict Equipment Fueling and Maintenance near Waterways C-9 Control Erosion Near Waterways and Suitable Habitat for Covered Species C-11 Construct Locking Gates at Strategic Locations on Access Roads VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat CTS-1 Conduct Pre-Activity Clearance Surveys for California Tiger Salamander CTS-2 Cover Excavated Holes or Trenches that could Trap California Tiger Salamanders CTS-3 Prohibit the Use of Monofilament Netting CTS-4 Avoid or Minimize Effects on Burrow Complexes

Table 5-4 Summary of Conservation Strategy for California Tiger Salamander[1]	
Biological Goal	**Applicable Measures**
CTS Goal 2: Avoid and minimize impacts on California tiger salamander and its habitat during O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-9 Restrict Equipment Fueling and Maintenance near Waterways O&M-10 Control Erosion near Waterways and Suitable Habitat Occupied for Covered Species O&M-12 Revegetate Temporarily Disturbed Areas O&M-14 Prepare and Implement Noxious Weed and Invasive Plant Control Plan VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat CTS-1 Conduct Pre-Activity Clearance Surveys for California Tiger Salamander CTS-2 Cover Excavated Holes or Trenches that could Trap California Tiger Salamanders CTS-3 Prohibit the Use of Monofilament Netting CTS-4 Avoid or Minimize Effects on Burrow Complexes
CTS Goal 3: Contribute to regional conservation of California tiger salamander to compensate for impacts resulting from construction and O&M Covered Activities.	CTS-5 Mitigate Unavoidable Impacts on California Tiger Salamander

Notes: AMM = avoidance and minimization measure; C = construction; CTS = California tiger salamander; O&M = operation and maintenance; PD = planning and design; VP = vernal pool

1 Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.5 WESTERN SPADEFOOT TOAD (WSFT)

5.2.5.1 WSFT Biological Goals

- WSFT Goal 1: Avoid and minimize direct and indirect impacts on WSFT and its suitable habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable populations of WSFT within the HCP Planning Area over the 30-year ITP term.

- WSFT Goal 2: Avoid and minimize impacts on WSFT and its suitable habitat resulting from O&M Covered Activities to the maximum extent practicable in order to conserve the quality of existing WSFT habitat and help maintain viable populations of WSFT in the HCP Planning Area over the 30-year ITP term.

- WSFT Goal 3: Contribute to local and/or regional conservation of WSFT and its habitat by preserving a minimum of 11.80 acres of suitable breeding pools for WSFT and 169.58 acres of associated upland habitat.

5.2.5.2 WSFT Conservation Strategy

As described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on Covered Species, including WSFT and its suitable habitat. These planning-design measures contribute to the WSFT conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as WSFT and its suitable habitats, that should be considered and further evaluated. This effort provided the baseline for developing the WSFT conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for WSFT (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable populations of WSFT in the HCP Planning Area.

- Designing roads to avoid sediment loading to surface waterways, such as vernal pools/swales (AMM PD-3), minimizes indirect effects on WSFT suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitats for WSFT. These efforts benefit WSFT populations in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on this invertebrate’s habitat have been avoided during planning and design. SCE would conduct construction and O&M Covered Activities in the vicinity of vernal pools/swales, puddles, and annual grassland, all of which support suitable habitat for WSFT. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit WSFT (see Tables 2-2 and 2-4).

Additional AMMs are incorporated into this species’ conservation strategy. During implementation of construction and Class 2 O&M Covered Activities, vernal pools/swales and stock ponds/basins, all of which are suitable habitat for WSFT, would be avoided to the maximum extent practicable through a marked and monitored minimum 250-foot buffer (VP-1 and VP-2; see also Table 5-14). These habitat-specific AMMs would maintain the existing hydrological integrity of WSFT suitable habitat located within the HCP Planning Area. Thus, the existing habitat quality for WSFT in the HCP Planning Area would be maintained during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support WSFT Biological Goal #1.

In addition to the habitat-specific measures described above, species-specific measures are incorporated into the WSFT conservation strategy. During implementation of construction and Class 2 O&M Covered Activities where these occur in WSFT suitable habitat (i.e., within 1.24 miles of suitable breeding habitat of WSFT), pre-activity WSFT clearance surveys would be conducted (WSFT-1), and excavated holes or trenches would be covered overnight and inspected for trapped salamanders prior to filling (WSFT-2) (see also Table 5-14). These species-specific AMMs would avoid and minimize harm, injury, and mortality to WSFT that may otherwise result from implementing Covered Activities.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities, the habitat-specific conservation measures (i.e., VP-1 and VP-2), and the species-specific measures (i.e., WSFT-1, WSFT-2) are a comprehensive, integrated set of measures designed to conserve WSFT populations and the existing quality of WSFT suitable habitat within SCE's ROW and the HCP Planning Area, and achieve WSFT Biological Goals #1 and #2. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-5, these AMMs avoid or minimize direct and indirect impacts on WSFT and it suitable habitat that would result from implementing construction and O&M Covered Activities.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Species Population.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, VP-1, and VP-2), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and WSFT Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for WSFT (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable populations of WSFT in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), including vernal pools and stock ponds/basins that are WSFT suitable habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Further, establishing a 250-foot-wide buffer zone around vernal pool/swale habitat while implementing Class 2 O&M Covered Activities (AMM VP-1) maintains habitat and water quality for WSFT in the HCP Planning Area and conserves the existing hydrological integrity of vernal pools/swales and stock ponds/basins during implementation of Covered Activities. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on WSFT in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on WSFT and its suitable habitat. Preconstruction surveys, compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), and monitoring of ground-disturbing activities in natural vegetation near vernal pool/swale habitat (AMM VP-2) ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent habitat for WSFT.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-6, C-8, C-9, C-11, O&M-2, O&M-6, O&M-7, O&M-9, O&M-10, O&M-12, and O&M-14) minimize direct and indirect effects on WSFT suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provides information to SCE and SCE contract workers to teach them identify WSFT suitable habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3). Restricting Covered Activities in and around WSFT suitable habitat (e.g., no fueling or maintenance of vehicles within 250 of aquatic features [AMMs C-8 and O&M-9], implementing erosion control measures near aquatic features [AMMs C-9 and O&M-10], and staying on existing roads [AMM O&M-6]) maintains the quality of WSFT suitable habitat in the HCP Planning Area. AMM WSFT-1, which prohibits the use monofilament netting that could entangle and harm of kill WSFT, would avoid and minimize harm, injury, and mortality to this species while conducting erosion control measures in suitable WSFT habitat (i.e., within 1.24 miles of suitable WSFT breeding habitat). Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), controlling weeds (AMMs C-6 and O&M-14), and revegetating disturbed areas (AMM O&M-12), minimize indirect effects on WSFT suitable habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.

- **Minimization Measures to Reduce Risk of Harm, Injury, and Mortality to Species.** Species-specific AMMs (specifically, WSFT-1 and WSFT-2) minimize the risk of harm, injury, and mortality to WSFT, thereby maintaining viable populations of WSFT in the HCP Planning Area. Prior to implementing construction and Class 2 O&M Covered Activities within 1.24 miles of WSFT suitable breeding habitat, a monitor would conduct a daily check (i.e., prior to the start of work) for WSFT under all materials and equipment that has been stored over-night and that would be used that day (WSFT-1). To prevent inadvertent entrapment of WSFT during construction or Class 2 O&M Covered Activities, trenches and holes would be covered overnight and inspected for trapped WSFT before they are filled (WSFT-2). These additional species-specific AMMs would benefit individual adult and juvenile WSFT.

By implementing measures in Table 5-5 during construction and O&M Covered Activities, WSFT suitable habitat would be avoided to the maximum extent practicable, and direct and indirect impacts on WSFT avoided and minimized, and the potential for the continued existence of WSFT in the HCP Planning Area is increased; thus, the two of the three biological goals of the WSFT conservation strategy (WSFT Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented during O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on WSFT suitable habitat. Several AMMs may not be feasible under emergency conditions, including, but not limited to, pre-activity surveys (O&M-5). SCE would maintain a biologist on-call to support habitat avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where WSFT suitable habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing habitat conditions would be maintained in most WSFT suitable habitat in the HCP Planning Area through the implementation of planning-design, construction, O&M, and species-specific AMMs (see Table 5-4), some WSFT suitable habitat cannot be avoided and would be permanently lost or temporarily disturbed as a result of implementing Covered Activities. WSFT Biological Goal #3 would be provided through the acquisition of WSFT mitigation habitat, including both breeding and aestivation/foraging habitats, that would offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM VP-3 in Table 5-14 and additional detail in Table 5-15). WSFT Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 181.38 acres of WSFT breeding and aestivation habitat at a USFWS-approved conservation bank(s).

- Preserve in perpetuity 181.38 acres of breeding and aestivation habitat occupied by WSFT through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved "turnkey" land management entity.

- Use a combination of the above two options to mitigate unavoidable impacts on WSFT.
- Use a combination of the above options to mitigate unavoidable impacts on CTS to the maximum extent practicable.

The preservation of WSFT breeding and aestivation/foraging habitat would permanently protect high-quality occupied habitat for WSFT in perpetuity. Compensatory mitigation would include permanently protected and occupied habitat for WSFT. This compensatory mitigation acreage would benefit the species by increasing the amount of occupied habitat that is protected in perpetuity on a local and regional scale. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This compensatory mitigation would contribute towards the local and regional conservation of WSFT and its habitat.

Temporary disturbance of habitat, loss of individuals, permanent direct loss of WSFT habitat, and disturbance of lands within the watershed supporting WSFT habitat in the HCP Planning Area would be mitigated by preserving better quality WSFT habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property.

The WSFT AMMs would restrict the potential for indirect effects to alter watersheds that support existing hydrology for vernal pools. Because the transmission line facilities being proposed in the HCP Planning Area are generally narrow and linear, they would have little intersection with existing watersheds for vernal pools and other habitats suitable for WSFT. In addition, a portion of the 4.09 acres of breeding habitat and 93.36 acres of upland habitat for WSFT is in actively managed and frequently disturbed locations, such as puddles, that are less likely to support WSFT. All 181.38 acres of mitigation land would be of greater value habitat for WSFT than these marginal habitats that would be affected because the mitigation acreage would be located in relatively undisturbed landscapes of natural vegetation that are known to support WSFT. Therefore, through this compensatory mitigation, the WSFT Biological Goal #3 would be attained (Table 5-5).

Table 5-5 summarizes the WSFT AMMs and mitigation that constitute the WSFT conservation strategy. By fulfilling the biological goals for this species, the Cross Valley Line would support the persistence of WSFT in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-5
Summary of Conservation Strategy for Western Spadefoot Toad[1]

Biological Goal	Applicable Measures
WSFT Goal 1: Avoid and minimize impacts on western spadefoot toad and its habitat during construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources PD-3 Design Roads to Avoid Sediment Loading to Surface Waterways C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-6 Implement Noxious Weed and Invasive Plant Control Plan C-8 Restrict Equipment Fueling and Maintenance near Waterways C-9 Control Erosion Near Waterways and Suitable Habitat for Covered Species

Table 5-5 Summary of Conservation Strategy for Western Spadefoot Toad[1]	
Biological Goal	**Applicable Measures**
	C-11 Construct Locking Gates at Strategic Locations On Access Roads VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat WSFT-1 Conduct Pre-Activity Clearance Surveys for Western Spadefoot Toads WSFT-2 Cover Excavated Holes or Trenches that could Trap Western Spadefoot Toads
WSFT Goal 2: Avoid and minimize impacts on western spadefoot toad and its habitat during O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-9 Restrict Equipment Fueling and Maintenance near Waterways O&M-10 Control Erosion near Waterways and Suitable Habitat for Covered Species O&M-12 Revegetate Temporarily Disturbed Areas O&M-14 Prepare and Implement Noxious Weed and Invasive Plant Control Plan VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat WSFT-1 Conduct Pre-Activity Clearance Surveys for Western Spadefoot Toads WSFT-2 Cover Excavated Holes or Trenches that could Trap Western Spadefoot Toads
WSFT Goal 3: Contribute to regional conservation of western spadefoot toad to compensate for impacts resulting from construction and O&M Covered Activities.	VP-3 Mitigate Unavoidable Impacts on Vernal Pool/Swale Habitat

Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; VP = vernal pool; WSFT = western spadefoot toad

1 Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.6 Little Willow Flycatcher (LWF)

5.2.6.1 LWF Biological Goals

- LWF Goal 1: Avoid and minimize direct and indirect impacts on LWF and its habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable habitat for LWF within the HCP Planning Area over the 30-year ITP term.

- LWF Goal 2: Avoid and minimize impacts on LWF and its habitat resulting from O&M Covered Activities to the maximum extent practicable to help conserve and maintain viable habitat for LWF within the HCP Planning Area over the 30-year ITP term.

- LWF Goal 3: Contribute to regional conservation of LWF habitat by enhancing riparian habitat along the St. John's River, in accordance with the Riparian Habitat Enhancement Plan (Appendix F), to offset any indirect effects on LWF resulting from construction and O&M Covered Activities.

5.2.6.2 LWF Conservation Strategy

Suitable habitat for LWF is present within the HCP Planning Area and the HCP Planning Area is within the historical range of the species. Thus, as described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on LWF habitat. These planning-design measures contribute to the LWF conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as LWF and its suitable habitat, that should be considered and further evaluated. This effort provided the baseline for developing the LWF conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for LWF (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable habitat for LWF in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitat for LWF; therefore, Covered Activities would not result in any temporary or permanent loss of riparian habitat that is suitable foraging and breeding habitat for LWF. These efforts benefit riparian bird species populations, such as LWF, in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on LWF habitat have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of riparian habitat that support suitable habitat for LWF. Covered Activities have the potential to temporarily harass nesting LWF. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit LWF habitat (see Tables 2-2 and 2-4).

To protect LWF and its habitat, an additional AMM has been included in this species' conservation strategy. Prior to implementing construction and non-emergency O&M Covered Activities in and adjacent to riparian vegetation, SCE biologists would survey for LWF in areas where suitable habitat is present, and buffers would be established around confirmed nests (AMM Nesting Birds-1; see also Table 5-14 and Appendix E). This measure would avoid and minimize the risk of harassment, harm, and mortality to LWF during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support LWF Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the species-specific conservation measures (i.e., Nesting Birds-1) are a comprehensive, integrated set of measures designed to conserve the existing LWF suitable habitat within SCE's ROW and the HCP Planning Area. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-6, these AMMs avoid or minimize direct (temporary) and indirect impacts on suitable habitat for LWF that would result from implementing construction and O&M Covered Activities, and achieve LWF Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Habitat.** Several AMMs (specifically C-2, C-3, O&M-1, O&M-3, O&M-4, O&M-5, and Nesting Birds-1), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and LWF Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for LWF (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable habitat for LWF in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), specifically riparian habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on riparian habitat in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on LWF its suitable habitat. Preconstruction surveys (C-2, Nesting Birds-1) and compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent LWF habitat.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-7, C-10, C-11, O&M-2, O&M-6, O&M-7, O&M-11, and O&M-13) minimize direct and indirect effects on LWF suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify suitable LWF habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3), and includes a discussion of potential habitat for LWF in the vicinity of the work area based on habitat mapping. Staying on existing roads [AMM O&M-6]) maintains the quality of existing riparian habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), implementing a fire control plan (AMMs C-7 and O&M-11), and removing trash (AMMs C-10 and O&M-13), minimize indirect effects on riparian habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.

- **Minimization Measures to Reduce Risk of Harm, Injury, and Mortality to Species.** Species-specific AMMs (specifically, C-2 and Nesting Birds-1) minimize the risk of harassment, harm, and mortality to LWF, thereby maintaining viable populations of LWF in the HCP Planning Area if this species is documented to occur there. Prior to implementing construction and Class 2 O&M Covered Activities, preconstruction surveys would be conducted in riparian habitats; if a nesting LWF is located during the surveys, a buffer would be established around the nest, which would minimize the risk of harm and mortality to the this species that may otherwise result from implementing Covered Activities. Prohibiting pets (AMMs C-5 and O&M-8) would also reduce risk of harm, injury, and mortality to any LWF that may occur in suitable habitat in the HCP Planning Area.

By implementing measures in Table 5-6 during construction and O&M Covered Activities, LWF suitable habitat would be avoided to the maximum extent practicable; thus, two of the three biological goals of the LWF conservation strategy (LWF Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented under O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on LWF suitable habitat. Several AMMs may not be feasible under emergency conditions, including but not limited to pre-activity surveys

(O&M-5 and Nesting Birds-1). SCE would maintain a biologist on-call to support avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where suitable LWF habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing riparian habitat conditions would generally be maintained by the implementation of AMMs incorporated into the Covered Activities, Covered Activities occurring in proximity to riparian habitat may affect nesting LWFs and harassment of nesting LWFs could still occur. LWF Biological Goal #3 would be provided through the on-site enhancement of riparian habitat (AMM Nesting Birds-2; see Appendix F). This enhancement of riparian habitat would benefit the species by replacing and augmenting the amount of riparian habitat that is currently in the HCP Planning Area on a local and regional scale. This mitigation would contribute towards the local and regional conservation of LWF and its habitat. Therefore, through the enhancement of riparian habitat, the LWF Biological Goal #3 would be attained (Table 5-6).

Table 5-6 summarizes the AMMs and mitigation that constitute the LWF conservation strategy within the HCP Planning Area. By fulfilling the biological goals for this species, the Cross Valley Line would support the persistence of LWF habitat in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-6
Summary of Conservation Strategy for Little Willow Flycatcher[1]

Biological Goal	Applicable Measures
LWF Goal 1: Avoid and minimize impacts on little willow flycatcher and its habitat during construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources C-1 Conduct Environmental Awareness Training for Workers C-2 Implement Nesting Bird Avoidance C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-5 Prohibit Pets C-7 Implement Fire Prevention and Control Plan C-10 Remove Trash Daily C-11 Construct Locking Gates at Strategic Locations on Access Roads Nesting Birds-1 Avoid or Minimize Effects of Construction and Class 2 O&M Activities on Nesting Birds
LWF Goal 2: Avoid and minimize impacts on little willow flycatcher and its habitat during O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-8 Prohibit Pets O&M-11 Prepare and Implement Fire Prevention and Control Plan

Table 5-6 Summary of Conservation Strategy for Little Willow Flycatcher[1]	
Biological Goal	**Applicable Measures**
	O&M-13 Remove Trash Nesting Birds-1 Avoid or Minimize Effects of Construction and Class 2 O&M Activities on Nesting Birds
LWF Goal 3: Contribute to regional conservation of little willow flycatcher to compensate for impacts resulting from construction and O&M Covered Activities.	Nesting Birds-2 Mitigate Unavoidable Impacts.

Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; LWF = little willow flycatcher

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.7 SOUTHWESTERN WILLOW FLYCATCHER (SWF)

5.2.7.1 SWF Biological Goals

- SWF Goal 1: Avoid and minimize direct and indirect impacts on SWF and its habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable habitat for SWF within the HCP Planning Area over the 30-year ITP term.
- SWF Goal 2: Avoid and minimize impacts on SWF and its habitat resulting from O&M Covered Activities to the maximum extent practicable to conserve and help to maintain viable habitat for SWF within the HCP Planning Area over the 30-year ITP term.
- SWF Goal 3: Contribute to regional conservation of SWF habitat by enhancing riparian habitat along the St. John’s River, in accordance with the Riparian Habitat Enhancement Plan (Appendix F), to offset any indirect effects on SWF resulting from construction and O&M Covered Activities.

5.2.7.2 SWF Conservation Strategy

Suitable habitat for SWF is present within the HCP Planning Area and the HCP Planning Area is within the historical range of the species. Thus, as described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on SWF habitat. These planning-design measures contribute to the SWF conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as SWF and its suitable habitat, that should be considered and further evaluated. This effort provided the baseline for developing the SWF conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for SWF (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable habitat for SWF in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitat for SWF; therefore, Covered Activities would not result in any temporary or permanent loss of riparian habitat that is suitable foraging and breeding habitat for SWF. These efforts benefit riparian bird species populations, such as SWF, in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on SWF habitat have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of riparian habitat that support suitable habitat for SWF. Covered Activities would not result in any temporary or permanent loss of riparian habitat that is suitable foraging and breeding habitat for SWF. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit SWF habitat (see Tables 2-2 and 2-4).

To protect SWF and its habitat, an additional AMM has been included in this species' conservation strategy. Prior to implementing construction and non-emergency O&M Covered Activities in and adjacent to riparian vegetation, SCE biologists would survey for SWF in areas where suitable habitat is present, and buffers would be established around confirmed nests (AMM Nesting Birds-1; see also Table 5-14 and Appendix E). This measure would avoid and minimize the risk of harassment, harm, and mortality SWF during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support SWF Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the species-specific conservation measures (i.e., Nesting Birds-1) are a comprehensive, integrated set of measures designed to conserve the existing SWF suitable habitat within SCE's ROW and the HCP Planning Area. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-7, these AMMs avoid or minimize direct (temporary) and indirect impacts on suitable habitat for SWF that would result from implementing construction and O&M Covered Activities, and achieve SWF Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Habitat.** Several AMMs (specifically C-2, C-3, O&M-1, O&M-3, O&M-4, O&M-5, and Nesting Birds-1), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and SWF Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for SWF (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable habitat for SWF in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), specifically riparian habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on riparian habitat in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on SWF its suitable habitat. Preconstruction surveys (C-2, Nesting Birds-1) and compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent SWF habitat.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-7, C-10, C-11, O&M-2, O&M-6, O&M-7, O&M-11, and O&M-13) minimize direct and indirect effects on SWF suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify suitable SWF habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3), and includes a discussion of potential habitat for SWF in the vicinity of the work area based on habitat mapping. Staying on existing roads [AMM O&M-6]) maintains the quality of existing riparian habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), implementing a fire control plan (AMMs C-7 and O&M-11), and removing trash (AMMs C-10 and O&M-13), minimize indirect effects on riparian habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.

- **Minimization Measures to Reduce Risk of Harm, Injury, and Mortality to Species.** Species-specific AMMs (specifically, C-2 and Nesting Birds-1) minimize the risk of harassment, harm, and mortality to SWF, thereby maintaining viable populations of SWF in the HCP Planning Area if this species is documented to occur there. Prior to implementing construction and Class 2 O&M Covered Activities, preconstruction surveys would be conducted in riparian habitats; if a nesting SWF is located during the surveys, a buffer would be established around the nest, which would minimize the risk of harm and mortality to the this species that may otherwise result from implementing Covered Activities. Prohibiting pets (AMMs C-5 and O&M-8) would also reduce risk of harm, injury, and mortality to any SWF that may occur in suitable habitat in the HCP Planning Area.

By implementing measures in Table 5-7 during construction and O&M Covered Activities, SWF suitable habitat would be avoided to the maximum extent practicable; thus, two of the three biological goals of the SWF conservation strategy (SWF Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented under O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on SWF suitable habitat. Several AMMs may not be feasible under emergency conditions, including but not limited to pre-activity surveys (O&M-5 and Nesting Birds-1). SCE would maintain a biologist on-call to support avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where suitable SWF habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing riparian habitat conditions would generally be maintained by the implementation of AMMs incorporated into the Covered Activities, Covered Activities occurring in proximity to riparian habitat may affect nesting LWFs and harassment of nesting LWFs could still occur. SWF Biological Goal #3 would be provided through the on-site enhancement of riparian habitat (AMM Nesting Birds-2; see Appendix F). This enhancement of riparian habitat would benefit the species by replacing and augmenting the amount of riparian habitat that is currently in the HCP Planning Area on a local and regional scale. This mitigation would contribute towards the local and regional conservation of SWF and its habitat. Therefore, through the enhancement of riparian habitat, SWF Biological Goal #3 would be attained (Table 5-7).

Table 5-7 summarizes the SWF AMMs and mitigation that constitute the SWF conservation strategy within the HCP Planning Area. By fulfilling the biological goals for this species, the Cross Valley Line measures would support the persistence of SWF habitat in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-7
Summary of Conservation Strategy for Southwestern Willow Flycatcher[1]

Biological Goal	Applicable Measures
SWF Goal 1: Avoid and minimize impacts on southwestern willow flycatcher and its habitat during construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources C-1 Conduct Environmental Awareness Training for Workers C-2 Implement Nesting Bird Avoidance C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-5 Prohibit Pets C-7 Implement Fire Prevention and Control Plan C-10 Remove Trash Daily C-11 Construct Locking Gates at Strategic Locations on Access Roads Nesting Birds-1 Avoid or Minimize Effects of Construction and Class 2 O&M Activities on Nesting Birds
SWF Goal 2: Avoid and minimize impacts on southwestern willow flycatcher and its habitat resulting from O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-8 Prohibit Pets O&M-11 Prepare and Implement Fire Prevention and Control Plan O&M-13 Remove Trash Nesting Birds-1 Avoid or Minimize Effects of Construction and Class 2 O&M Activities on Nesting Birds
SWF Goal 3: Contribute to regional conservation of southwestern willow flycatcher to compensate for impacts resulting from Construction and O&M Covered Activities.	Nesting Birds-2 Mitigate Unavoidable Impacts

Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; SWF = southwestern willow flycatcher

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.8 LEAST BELL'S VIREO (LBV)

5.2.8.1 LBV Biological Goals

- LBV Goal 1: Avoid and minimize direct and indirect impacts on LBV and its habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable habitat for LBV within the HCP Planning Area over the 30-year ITP term.

- LBV Goal 2: Avoid and minimize impacts on LBV and its habitat resulting from O&M Covered Activities to the maximum extent practicable to help conserve and maintain viable habitat for LBV within the HCP Planning Area over the 30-year ITP term.

- LBV Goal 3: Contribute to local and/or regional conservation of LBV habitat by enhancing riparian habitat along the St. John's River, in accordance with the Riparian Habitat Enhancement Plan (Appendix F), to offset any indirect effects on LBV resulting from construction and O&M Covered Activities.

5.2.8.2 LBV Conservation Strategy

Suitable habitat for LBV is present within the HCP Planning Area and the HCP Planning Area is within the historical range of the species. Thus, as described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on LBV habitat. These planning-design measures contribute to the LBV conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as LBV and its suitable habitat, that should be considered and further evaluated. This effort provided the baseline for developing the LBV conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for LBV (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable habitat for LBV in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitat for LBV; therefore, Covered Activities would not result in any temporary or permanent loss of riparian habitat that is suitable foraging and breeding habitat for LBV. These efforts benefit riparian bird species populations, such as LBV, in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on LBV habitat have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of riparian habitat that support suitable habitat for LBV. Covered Activities would not result in any temporary or permanent loss of riparian habitat that is suitable foraging and breeding habitat for LBV. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit LBV habitat (see Tables 2-2 and 2-4).

To protect LBV and its habitat, an additional AMM has been included in this species' conservation strategy. Prior to implementing construction and non-emergency O&M Covered Activities in and adjacent to riparian vegetation, SCE biologists would survey for LBV in areas where suitable habitat is present, and buffers would be established around confirmed nests (AMM Nesting Birds-1; see also Table 5-14 and Appendix E). This measure would avoid and minimize the risk of harassment, harm, and mortality to LBV during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support LBV Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the species-specific conservation measures (i.e., Nesting Birds-1) are a comprehensive, integrated set of measures designed to conserve the existing LBV suitable habitat within SCE's ROW and the HCP Planning Area. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-8, these AMMs avoid or minimize direct (temporary) and indirect impacts on suitable habitat for LBV that would result from implementing construction and O&M Covered Activities, and achieve LBV Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Habitat.** Several AMMs (specifically C-2, C-3, O&M-1, O&M-3, O&M-4, O&M-5, and Nesting Birds-1), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and LBV Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for LBV (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable habitat for LBV in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), specifically riparian habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on riparian habitat in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on LBV and its suitable habitat. Preconstruction surveys (C-2, Nesting Birds-1) and compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent LBV habitat.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-7, C-10, C-11, O&M-2, O&M-6, O&M-7, O&M-11, and O&M-13) minimize direct and indirect effects on LBV suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify suitable LBV habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3), and includes a discussion of potential habitat for LBV in the vicinity of the work area based on habitat mapping. Staying on existing roads [AMM O&M-6]) maintains the quality of existing riparian habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), implementing a fire control plan (AMMs C-7 and O&M-11), and removing trash (AMMs C-10 and O&M-13), minimize indirect effects on riparian habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.

- **Minimization Measures to Reduce Risk of Harm, Injury, and Mortality to Species.** Species-specific AMMs (specifically, C-2 and Nesting Birds-1) minimize the risk of harassment, harm, and mortality to LBV, thereby maintaining viable populations of LBV in the HCP Planning Area if this species is documented to occur there. Prior to implementing construction and Class 2 O&M Covered Activities, preconstruction surveys would be conducted in riparian habitats; if a nesting LBV is located during the surveys, a buffer would be established around the nest, which would minimize the risk of harm and mortality to the this species that may otherwise result from implementing Covered Activities. Prohibiting pets (AMMs C-5 and O&M-8) would also reduce risk of harm, injury, and mortality to any LBV that may occur in suitable habitat in the HCP Planning Area.

By implementing measures in Table 5-8 during construction and O&M Covered Activities, LBV suitable habitat would be avoided to the maximum extent practicable; thus, two of the three biological goals of the LBV conservation strategy (LBV Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented under O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on LBV suitable habitat. Several AMMs may not be feasible under emergency conditions, including but not limited to pre-activity surveys (O&M-5 and Nesting Birds-1). SCE would maintain a biologist on-call to support avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where suitable LBV habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing riparian habitat conditions would generally be maintained by the implementation of AMMs incorporated into the Covered Activities, Covered Activities occurring in proximity to riparian habitat may affect nesting LBV and harassment of nesting LWFs could still occur. LBV Biological Goal #3 would be provided through the on-site enhancement of riparian habitat (AMM Nesting Birds-2; see Appendix F). This enhancement of riparian habitat would benefit the species by replacing and augmenting the amount of riparian habitat that is currently in the HCP Planning Area on a local and regional scale. This mitigation would contribute towards the local and regional conservation of LBV and its habitat. Therefore, through the enhancement of riparian habitat, LBV Biological Goal #3 would be attained (see Table 5-8).

Table 5-8 summarizes the LBV AMMs and mitigation that constitute the LBV conservation strategy within the HCP Planning Area. By fulfilling the biological goals for this species, the Cross Valley Line would support the persistence of LBV habitat in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-8
Summary of Conservation Strategy for Least Bell's Vireo[1]

Biological Goal	Applicable Measures
LBV Goal 1: Avoid and minimize impacts on least Bell's vireo and its habitat during construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources C-1 Conduct Environmental Awareness Training for Workers C-2 Implement Nesting Bird Avoidance C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-5 Prohibit Pets C-7 Implement Fire Prevention and Control Plan

Table 5-8 Summary of Conservation Strategy for Least Bell's Vireo[1]	
Biological Goal	**Applicable Measures**
	C-10 Remove Trash Daily C-11 Construct Locking Gates at Strategic Locations on Access Roads Nesting Birds-1 Avoid or Minimize Effects of Construction and Class 2 O&M Activities on Nesting Birds
LBV Goal 2: Avoid and minimize impacts on least Bell's vireos and their habitat resulting from O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-8 Prohibit Pets O&M-11 Prepare and Implement Fire Prevention and Control Plan O&M-13 Remove Trash Nesting Birds-1 Avoid or Minimize Effects of Construction and Class 2 O&M Activities on Nesting Birds
LBV Goal 3: Contribute to regional conservation of least Bell's vireo to compensate for impacts resulting from Construction and O&M Covered Activities.	Nesting Birds-2 Mitigate Unavoidable Impacts

Notes: AMM = avoidance and minimization measure; C = construction; LBV = least Bell's vireo; O&M = operation and maintenance; PD = planning and design

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.9 Burrowing Owl (BUOW)

5.2.9.1 BUOW Biological Goals

- BUOW Goal 1: Avoid and minimize direct and indirect impacts on BUOW and its suitable habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable habitat for BUOW within the HCP Planning Area over the 30-year ITP term.

- BUOW Goal 2: Avoid and minimize impacts on BUOW and its suitable habitat resulting from O&M Covered Activities to the maximum extent practicable to help conserve the quality of existing BUOW habitat and maintain viable populations of BUOW in the HCP Planning Area over the 30-year ITP term.

- BUOW Goal 3: Contribute to local and/or regional conservation of BUOW and its habitat by preserving a minimum of 175.54 acres of suitable breeding and foraging habitat (annual grassland) for BUOW.

5.2.9.2 BUOW Conservation Strategy

Suitable habitat for BUOW is present within the HCP Planning Area and the HCP Planning Area is within the historical range of the species. Thus, as described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on BUOW habitat. These planning-design measures contribute to the BUOW conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as BUOW and its suitable habitat, that should be considered and further evaluated. This effort provided the baseline for developing the BUOW conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for BUOW (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable habitat for BUOW in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitat for BUOW. These efforts would benefit BUOW populations in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on BUOW have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of grassland and agricultural row crop habitats that can potentially support BUOW. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit BUOW (Tables 2-2 and 2-4).

To protect BUOW and its habitat, a set of species-specific AMMs has been incorporated have been included in this species' conservation strategy. Prior to implementing construction and non-emergency O&M Covered Activities, work areas would be surveyed for BUOW and burrows where suitable habitat (i.e., annual grassland and agricultural row crops) is present (BUOW-1), and buffers would be established around potential and confirmed burrows according to USFWS guidelines (BUOW-2). If occupied burrows are found and cannot be avoided, owls would be passively relocated according to USFWS and CDFG guidelines (BUOW-3). These measures would reduce the harassment, harm, injury, and mortality to BUOW during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support BUOW Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the species-specific conservation measures (i.e., BUOW-1, BUOW-2, and BUOW-3) are a comprehensive, integrated set of measures designed to conserve existing BUOW and its suitable habitat within SCE's ROW and the HCP Planning Area. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-9, these AMMs avoid or minimize direct and indirect impacts on suitable habitat for BUOW that would result from implementing construction and O&M Covered Activities, and achieve BUOW Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Habitat.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, and BUOW-1), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and BUOW Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for BUOW (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable habitat for BUOW in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), including suitable BUOW habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on BUOW habitat in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on BUOW and its suitable habitat. Preconstruction surveys (BUOW-1) and compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent BUOW habitat.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-10, C-11, O&M-2, O&M-6, O&M-7, and O&M-13) minimize direct and indirect effects on BUOW suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify suitable BUOW habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3), and includes a discussion of potential habitat for BUOW in the vicinity of the work area based on habitat mapping. Staying on existing roads [AMM O&M-6]) maintains the quality of existing BUOW habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7) and removing trash (AMMs C-10 and O&M-13), minimize indirect effects on riparian habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.
- **Minimization Measures to Reduce Risk of Harm, Injury, and Mortality to Species.** Species-specific AMMs (specifically, BUOW-2 and BUOW-3) minimize the risk of harm, injury, and mortality to BUOW, thereby maintaining viable populations of BUOW in the HCP Planning Area if this species is documented to occur there. Prior to implementing construction and Class 2 O&M Covered Activities, preconstruction surveys would be conducted in suitable BUOW habitats (BUOW-1); if a BUOW is located during the surveys, a buffer would be established around the burrow (BUOW-2), which would minimize the risk of harm and mortality to the this species that may otherwise result from implementing Covered Activities. If occupied burrows cannot be avoided, the BUOW would be relocated (BUOW-3). Prohibiting pets (AMMs C-5 and O&M-8) would also reduce risk of harm, injury, and mortality to any BUOW that may occur in suitable habitat in the HCP Planning Area.

By implementing measures in Table 5-9 during construction and O&M Covered Activities, BUOW and its suitable habitat would be avoided to the maximum extent practicable; thus, two of the three biological goals of the BUOW conservation strategy (BUOW Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented under O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on BUOW and its suitable habitat. Several AMMs may not be feasible under emergency conditions, including but not limited to pre-activity surveys (O&M-5 and BUOW-1). SCE would maintain a biologist on-call to support avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where suitable BUOW habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing BUOW habitat would generally be maintained by the implementation of AMMs, as described above, some suitable BUOW habitat would be temporarily disturbed or permanently lost during Covered Activities. BUOW Biological Goal #3 would be provided through the acquisition of BUOW reproduction and foraging habitat mitigation that would offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM BUOW-4 in Table 5-14 and additional detail in Table 5-15). BUOW Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 175.54 acres of BUOW reproduction and foraging habitat at a USFWS-approved conservation bank(s).
- Preserve in perpetuity 175.54 acres of reproduction and foraging habitat occupied by BUOW through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved "turnkey" land management entity.
- Use a combination of the above options to mitigate unavoidable impacts on BUOW.

The preservation of BUOW reproduction and foraging habitat would permanently protect high-quality occupied habitat for BUOW in perpetuity. Compensatory mitigation would include permanently protected habitat for BUOW. This compensatory mitigation acreage would benefit the species by increasing the amount of BUOW habitat that is protected in perpetuity on a local and regional scale. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This compensatory mitigation would contribute towards the local and regional conservation of BUOW and its habitat.

Temporary disturbance of habitat permanent direct loss of BUOW habitat in the HCP Planning Area would be mitigated by preserving better quality BUOW habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property.

A portion of the 107.79 acres of habitat for BUOW is in actively managed and frequently disturbed locations that are less likely to support BUOW. Loss of individuals and permanent direct loss of BUOW habitat in the HCP Planning Area would be mitigated by preserving 175.54 acres of better quality BUOW habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property. Therefore, through this compensatory mitigation, the BUOW Biological Goal #3 would be attained (Table 5-9).

Table 5-9 summarizes the BUOW AMMs and mitigation that constitute the BUOW conservation strategy within the HCP Planning Area. By fulfilling the biological goals of this species, the Cross Valley Line would support the persistence of BUOW and its habitat in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-9 Summary of Conservation Strategy for Burrowing Owl[1]	
Biological Goal	**Applicable Measures**
BUOW Goal 1: Avoid or minimize impacts on burrowing owl and its habitat during construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-5 Prohibit Pets C-10 Remove Trash Daily C-11 Construct Locking Gates at Strategic Locations on Access Roads BUOW-1 Conduct Surveys for Burrowing Owl during Construction and Class 2 O&M Activities within or Adjacent to Burrowing Owl Habitat BUOW-2 Establish Exclusion Areas around Occupied Burrows BUOW-3 Relocate Owls from Unavoidable Occupied Burrows
BUOW Goal 2: Avoid and minimize impacts on burrowing owls and their habitat resulting from O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-8 Prohibit Pets O&M-13 Remove Trash BUOW-1 Conduct Surveys for Burrowing Owl during Construction and Class 2 O&M Activities within or Adjacent to Burrowing Owl Habitat BUOW-2 Establish Exclusion Areas around Occupied Burrows BUOW-3 Relocate Owls from Unavoidable Occupied Burrows
BUOW Goal 3: Contribute to regional conservation of burrowing owl to compensate for impacts resulting from Construction and O&M Covered Activities.	BUOW-4 Mitigate Unavoidable Impacts

Notes: AMM = avoidance and minimization measure; BUOW = burrowing owl; C = construction; O&M = operation and maintenance; PD = planning and design

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.10 SAN JOAQUIN KIT FOX (SJKF)

5.2.10.1 SJKF Biological Goals

- SJKF Goal 1: Avoid and minimize direct and indirect impacts on SJKF and its suitable habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable habitat for SJKF within the HCP Planning Area over the 30-year ITP term.

- SJKF Goal 2: Avoid and minimize impacts on SJKF and its habitat resulting from O&M Covered Activities to the maximum extent practicable to help maintain viable habitat for SJKF within the HCP Planning Area over the 30-year ITP term.

- SJKF Goal 3: Contribute to local and/or regional conservation of SJKF and its habitat by preserving a minimum of 203.40 acres of suitable breeding and foraging habitat (annual grassland) suitable for use by SJKF.

5.2.10.2 SJKF Conservation Strategy

Suitable habitat for SJKF is present within the HCP Planning Area and the HCP Planning Area is within the current range of the species. Thus, as described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on SJKF habitat. These planning-design measures contribute to the SJKF conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as SJKF and its suitable habitat, that should be considered and further evaluated. This effort provided the baseline for developing the SJKF conservation strategy.

- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact suitable habitat for SJKF (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable habitat for SJKF in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on suitable habitat for SJFK. These efforts would benefit SJKF populations in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on SJKF have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of grassland habitat and agricultural lands that can potentially support SJKF. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit SJKF (Tables 2-2 and 2-4).

To protect SJKF and its habitat, a set of species-specific AMMs has been incorporated into this species' conservation strategy. Construction areas would be surveyed for SJKF before the start of construction in areas where suitable habitat is present (SJKF-1), and buffers would be established around potential and confirmed SJKF dens according to the most current USFWS guidelines (SJKF-2) and the dens monitored (SJKF-5). However, in the case of a potential den that requires removal, these guidelines allow for determination of absence by three consecutive nights of surveys, in which case the den can be removed. Open trenches excavated by SCE would be covered each evening (SJKF-3) and pipes greater than 4 inches in diameter would be inspected prior to moving, capping, or burial to ensure no SJKF are located in the pipe (SJKF-4). Alternatively, stored pipe may be capped to prevent use by SJKF. In addition, there would be restrictions on rodenticide use (SJKF-6). These measures would reduce the harassment, harm, injury, and mortality to SJKF during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support SJKF Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the species-specific conservation measures are a comprehensive, integrated set of measures designed to conserve existing SJKF and its suitable habitat within SCE's ROW and the HCP Planning Area. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-10, these AMMs avoid or minimize direct and indirect impacts on suitable habitat for SJKF that would result from implementing construction and O&M Covered Activities, and achieve SJKF Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Habitat.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, and SJKF-1), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and SJKF Biological Goals #1 and #2 by retaining a greater amount intact suitable habitat for SJKF (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable habitat for SJKF in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), including suitable SJKF habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on SJKF habitat in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on SJKF and its suitable habitat. Preconstruction surveys (SJKF-1) and compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent SJKF habitat.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-10, C-11, O&M-2, O&M-6, and O&M-13) minimize direct and indirect effects on SJKF suitable habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify SJKF and its suitable habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3), and includes a discussion of potential habitat for SJKF in the vicinity of the work area based on habitat mapping. Staying on existing roads [AMM O&M-6]) maintains the quality of existing SJKF habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMM C-11) and removing trash (AMMs C-10 and O&M-13), minimize indirect effects on riparian habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.

- **Minimization Measures to Reduce Risk of Harm, Injury, and Mortality to Species.** Species-specific AMMs minimize the risk of harm, injury, and mortality to SJKF, thereby maintaining viable populations of SJFK in the HCP Planning Area if this species is documented to occur there. Prior to implementing construction and Class 2 O&M Covered Activities, preconstruction surveys would be conducted in suitable

SJKF habitats (SJKF-1). If a den is located during the surveys, a buffer would be established around it (SJKF-2) and the den monitored while Covered Activities are being implemented (SJKF-5), which would minimize the risk of harm and mortality to this species that may otherwise result from implementing Covered Activities. Excavated trenches and holes would be covered (SJKF-3) and these and pipes visually inspected daily during the implementation of Covered Activities (SJKF-4) to prevent entrapment of SJKF. Restricting rodenticide use (SJKF-6), staying on roads (AMM O&M-6), restricting vehicle speed (AMMs C-4 and O&M-7), and prohibiting pets (AMMs C-5 and O&M-8) would also further reduce risk of harm, injury, and mortality to any SJKF that may occur in suitable habitat in the HCP Planning Area.

By implementing measures in Table 5-9 during construction and O&M Covered Activities, SJKF and its suitable habitat would be avoided to the maximum extent practicable; thus, two of the three biological goals of the SJKF conservation strategy (SJKF Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented under O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on SJKF and its suitable habitat. Several AMMs may not be feasible under emergency conditions, including but not limited to pre-activity surveys (O&M-5 and SJKF-1). SCE would maintain a biologist on-call to support avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where suitable SJKF habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing SJKF habitat would generally be maintained by the implementation of AMMs, as described above, some suitable SJKF habitat would be temporarily disturbed or permanently lost during Covered Activities. SJKF Biological Goal #3 would be provided through the acquisition of SJKF habitat mitigation that would offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM SJKF-7 in Table 5-14 and additional detail in Table 5-15). SJKF Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 203.40 acres of SJKF habitat at a USFWS-approved conservation bank(s).
- Preserve in perpetuity 203.40 acres of habitat suitable for SJFK through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved "turnkey" land management entity.
- Use a combination of the above options to mitigate unavoidable impacts on SJKF.

The preservation of SJKF reproduction, foraging, and movement habitat would permanently protect high-quality occupied habitat for SJKF in perpetuity. Compensatory mitigation would include permanently protected habitat for SJKF. This compensatory mitigation acreage would benefit the species by increasing the amount of SJKF habitat that is protected in perpetuity on a local and regional scale. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This compensatory mitigation would contribute towards the local and regional conservation of SJKF and its habitat.

Temporary disturbance of habitat permanent direct loss of SJFK habitat in the HCP Planning Area would be mitigated by preserving better quality AJFK habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property.

A portion of the 175.01 acres of habitat for SJKF is in actively managed and frequently disturbed locations that are less likely to support SJKF. Permanent direct and temporary loss and disturbance of SJKF habitat in the HCP Planning Area would be mitigated by preserving 203.40 acres of better quality SJKF habitat, and a greater area of habitat, in perpetuity at a SJKF-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property. Therefore, through this compensatory mitigation, the SJKF Biological Goal #3 would be attained (Table 5-10).

Table 5-10 summarizes the SJKF AMMs and mitigation that constitute the SJKF conservation strategy within the HCP Planning Area. By fulfilling the biological goals of this species, the Cross Valley Line would support the persistence of SJKF and its habitat in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-10
Summary of Conservation Strategy for San Joaquin Kit Fox[1]

Biological Goal	Applicable Measures
SJKF Goal 1: Avoid and minimize impacts on San Joaquin kit fox and its habitat during construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-5 Prohibit Pets C-10 Remove Trash Daily C-11 Construct Locking Gates at Strategic Locations on Access Roads SJKF-1 Conduct Surveys for Kit Fox during Construction and Class 2 O&M Activities within or Adjacent to Suitable Kit Fox Habitat SJKF-2 Establish Buffers around Active Kit Fox Dens SJKF-3 Cover SCE-Excavated Trenches and Holes SJKF-4 Visually Inspect Stored Tubular or Open-Ended Materials and Equipment SJKF-5 Monitor Construction and O&M Activities near Active Kit Fox Dens SJKF-6 Restrict Rodenticide Use
SJKF Goal 2: Avoid and minimize impacts on San Joaquin kit foxes and their habitat resulting from O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-8 Prohibit Pets O&M-13 Remove Trash

Table 5-10 Summary of Conservation Strategy for San Joaquin Kit Fox[1]	
Biological Goal	**Applicable Measures**
	SJKF-1 Conduct Surveys for Kit Fox during Construction and Class 2 O&M Activities within or Adjacent to Suitable Kit Fox Habitat SJKF-5 Monitor Construction and O&M Activities near Active Kit Fox Dens SJKF-6 Restrict Rodenticide Use
SJKF Goal 3: Contribute to regional conservation of San Joaquin kit fox to compensate for impacts resulting from construction and O&M Covered Activities.	SJKF-7 Mitigate Unavoidable Impacts

Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; SJKF = San Joaquin kit fox

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013 for this document

5.2.11 Hoover's Spurge (HOSP)

5.2.11.1 HOSP Biological Goals

- HOSP Goal 1: Avoid and minimize impacts on primary constituent elements (PCEs) of designated critical habitat Units 7B, 7C, and 7D for HOSP resulting from construction Covered Activities to the maximum extent practicable within the HCP Planning Area over the 30-year ITP term.
- HOSP Goal 2: Avoid and minimize impacts on PCEs of designated critical habitat Units 7B, 7C, and 7D for HOSP resulting from O&M Covered Activities to the maximum extent practicable within the HCP Planning Area over the 30-year ITP term.
- HOSP Goal 3: Contribute to local and/or regional conservation of habitat for HOSP and compensate for impacts resulting from construction and O&M Covered Activities by preserving a minimum of 44.74 acres of high-quality vernal pools and annual grassland suitable as HOSP PCEs.

5.2.11.2 HOSP Conservation Strategy

Although HOSP was not identified during two years of focused plant surveys conducted in the HCP Planning Area, designated critical habitat for this species (Units 7B, 7C, and 7D) does occur in the HCP Planning Area. As described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize adverse modification to this designated critical habitat. These planning-design measures contribute to the HOSP conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as HOSP designated critical habitat and its PCEs, that should be considered and further evaluated. This effort provided the baseline for developing the HOSP conservation strategy.

- Designing project features to avoid or minimize effects on biological resources, including HOSP designated critical habitat and its PCEs, to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact PCEs for HOSP (than would otherwise have occurred without this avoidance design) in the HCP Planning Area.

- Designing roads to avoid sediment loading to surface waterways, such as vernal pools/swales (AMM PD-3), helped to minimize indirect effects on and maintain water quality in PCEs of HOSP designated critical habitat.

These AMMs avoid and minimize direct and indirect impacts on PCEs of HOSP designated critical habitat, and benefit HOSP designated critical habitat in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on this plant's designated critical habitat have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of vernal pools and annual grasslands that constitute PCEs of HOSP designated critical habitat; some of these PCEs would be permanently removed and their functionality temporarily disturbed as result of implementing Covered Activities. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit HOSP designated critical habitat. These AMMs are described in Chapter 2, Covered Activities (Tables 2-2 and 2-4).

Additional measures are incorporated into this species' conservation strategy. During implementation of construction and Class 2 O&M Covered Activities, vernal pools/swales, which are PCEs of HOSP designated critical habitat, would be avoided to the maximum extent practicable, with a marked and monitored minimum 25-foot buffer (VP-1 and VP-2; see also Table 5-14). These habitat-specific measures would maintain the existing hydrological integrity of vernal pools/swales (i.e., HOSP PCEs) located within the HCP Planning Area. Thus, the existing habitat quality of the HOSP PCEs in the HCP Planning Area would be maintained during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support HOSP Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the habitat-specific conservation measures (i.e., VP-1 and VP-2) are a comprehensive, integrated set of measures designed to conserve the existing quality of HOSP PCEs within SCE's ROW and the HCP Planning Area. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-11, these AMMs avoid or minimize direct and indirect impacts on PCEs of HOSP designated critical habitat that would result from implementing construction and O&M Covered Activities, and achieve HOSP Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Designated Critical Habitat PCEs.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, VP-1, and VP2-), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and HOSP Biological Goals #1 and #2 by retaining a greater amount intact PCEs of HOSP designated critical habitat in the HCP Planning Area (than would otherwise have occurred without these avoidance measures). The mapping of sensitive areas (AMMs C-3 and O&M-3), including vernal pools that are HOSP PCEs, guides and informs SCE and SCE contract workers in avoiding PCEs to the extent feasible while implementing Covered Activities. Further, establishing a 250-foot-wide buffer zone around vernal pool/swale habitat while implementing Class 2 O&M Covered Activities (AMM VP-1) maintains habitat quality in the HOSP PCEs in the HCP Planning Area. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on HOSP designated critical habitat in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on HOSP PCEs. Preconstruction surveys, compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), and monitoring of ground-disturbing activities in natural vegetation near vernal pool/swale habitat (AMM VP-2) ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent PCEs of HOSP designated critical habitat.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-6, C-8, C-9, C-11, O&M-2, O&M-6, O&M-7, O&M-9, O&M-10, O&M-12, and O&M-14) minimize direct and indirect effects on designated critical habitat, thereby maintaining habitat quality for HOSP PCEs in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify PCEs of HOSP designated critical habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3). Restricting Covered Activities in and around HOSP PCEs (e.g., no fueling or maintenance of vehicles within 250 of aquatic features [AMMs C-8 and O&M-9], implementing erosion control measures near aquatic features [AMMs C-9 and O&M-10], and staying on existing roads [AMM O&M-6]) maintains the quality of PCEs of HOSP designated critical habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), controlling weeds (AMMs C-6 and O&M-14), and revegetating disturbed areas (AMM O&M-12), minimize indirect effects on PCEs of HOSP designated critical habitat, thereby maintaining habitat quality in the HCP Planning Area.

By implementing measures in Table 5-11 during construction and O&M Covered Activities, PCEs of HOSP designated critical habitat Units 7B, 7C, and 7D would be avoided to the maximum extent practicable; thus, two of the three biological goals of the HOSP conservation strategy (HOSP Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented during O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on designated critical habitat. Several AMMs may not be feasible under emergency conditions, including, but not limited to, pre-activity surveys (O&M-5). SCE would maintain a biologist on-call to support habitat avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where designated critical habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing habitat conditions would be maintained in most designated critical habitat in the HCP Planning Area through the implementation of planning-design, construction, O&M, and habitat-specific AMMs (see Table 5-11), the functionality of some PCEs of HOSP designated critical habitat would be permanently lost or temporarily disturbed as a result of implementing Covered Activities. HOSP Biological Goal #3 would be provided through acquisition of habitat comparable to HOSP PCEs (including vernal pools/swales and annual grassland) to offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM VP-3 in Table 5-14 and additional detail in Table 5-15). HOSP Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 44.74 acres of vernal pool habitat (including both 11.34 acres of vernal pools/swales and 33.40 acres of annual grassland) at a USFWS-approved conservation bank(s).

- Preserve in perpetuity 44.74 acres of vernal pool habitat (including both 11.34 acres of vernal pools/swales and 33.40 acres of annual grassland) through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved "turnkey" land management entity.

- Use a combination of the above options to mitigate unavoidable impacts on HOSP PCEs.

The preservation of vernal pool habitat would permanently protect high-quality habitat for HOSP in perpetuity. Compensatory mitigation would include permanently protected vernal pool habitat. This compensatory mitigation acreage would benefit the species by increasing the amount of vernal pool habitat, which contains HOSP PCEs, that is protected in perpetuity on a local and regional scale. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area.

A portion of the 21.00 acres of PCEs in HOSP designated critical habitat is in actively managed and frequently disturbed locations that are less likely to support this species. Temporary disturbance and permanent direct loss of PCEs of HOSP designated critical habitat, and disturbance of lands within the watershed supporting HOSP designated critical habitat in the HCP Planning Area would be mitigated by preserving 44.74 acres of better quality habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property.

HOSP AMMs would restrict the potential for indirect effects to alter watersheds that support existing hydrology for vernal pools (i.e., HOSP PCEs). Because facilities being proposed in the HCP Planning Area are generally narrow and linear, they would have little intersection with existing watersheds for vernal pools. Mitigation land would be of greater value habitat than these marginal habitats that would be affected because the mitigation acreage would be located in relatively undisturbed landscapes of natural vegetation consisting of vernal pool grassland. Therefore, through this compensatory mitigation, the HOSP Biological Goal #3 would be attained (Table 5-11).

Table 5-11 summarizes the HOSP AMMs and mitigation measures that constitute the HOSP conservation strategy within the HCP Planning Area. By fulfilling the biological goals for this species, the Cross Valley Line would support the continued functionality of PCEs of HOSP designated critical habitat in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-11
Summary of Conservation Strategy for Hoover's Spurge[1]

Biological Goal	Applicable Measures
HOSP Goal 1: Avoid and minimize impacts on primary constituent elements of designated critical habitat for Hoover's spurge during Construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-6 Implement Noxious Weed and Invasive Plant Control Plan C-8 Restrict Equipment Fueling and Maintenance near Waterways C-9 Control Erosion Near Waterways and Suitable Habitat for Covered Species C-11 Construct Locking Gates at Strategic Locations on Access Roads VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat
HOSP Goal 2: Avoid and minimize impacts on primary constituent elements of designated critical habitat for Hoover's spurge resulting from O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-9 Restrict Equipment Fueling and Maintenance near Waterways O&M-10 Control Erosion near Waterways and Suitable Habitat for Covered Species O&M-12 Revegetate Temporarily Disturbed Areas O&M-14 Prepare and Implement Noxious Weed and Invasive Plant Control Plan VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat
HOSP Goal 3: Contribute to regional conservation of habitat for Hoover's spurge to compensate for impacts resulting from construction and O&M Covered Activities.	VP-3 Mitigate Unavoidable Impacts on Vernal Pool/Swale Habitat

Notes: AMM = avoidance and minimization measure; C = construction; HOSP = Hoover's spurge; O&M = operation and maintenance; PD = planning and design

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.12 San Joaquin Valley Orcutt Grass (SJVOG)

5.2.12.1 SJVOG Biological Goals

- SJVOG Goal 1: Avoid and minimize impacts on PCEs of designated critical habitat Units 6C and D for SJVOG resulting from construction Covered Activities to the maximum extent practicable within the HCP Planning Area over the 30-year ITP term.

- SJVOG Goal 2: Avoid and minimize impacts on PCEs of designated critical habitat Units 6C and D for SJVOG resulting from O&M Covered Activities to the maximum extent practicable within the HCP Planning Area over the 30-year ITP term.

- SJVOG Goal 3: Contribute to local and/or regional conservation of habitat for SJVOG and compensate for impacts resulting from construction and O&M Covered Activities by preserving a minimum of 44.74 acres of high-quality vernal pools and annual grassland suitable as SJVOG PCEs.

5.2.12.2 SJVOG Conservation Strategy

Although SJVOG was not identified during two years of focused plant surveys conducted in the HCP Planning Area, designated critical habitat for this species (Units 6C and D) does occur in the HCP Planning Area. As described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize adverse modification to this designated critical habitat. These planning-design measures contribute to the SJVOG conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as SJVOG designated critical habitat and its PCEs, that should be considered and further evaluated. This effort provided the baseline for developing the SJVOG conservation strategy.

- Designing project features to avoid or minimize effects on biological resources, including SJVOG designated critical habitat and its PCEs, to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact PCEs for SJVOG (than would otherwise have occurred without this avoidance design) in the HCP Planning Area.

- Designing roads to avoid sediment loading to surface waterways, such as vernal pools/swales (AMM PD-3), helped to minimize indirect effects on and maintain water quality in PCEs of SJVOG designated critical habitat.

These AMMs avoid and minimize direct and impacts on PCEs of SJVOG designated critical habitat and benefit SJVOG designated critical habitat in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on this plant’s designated critical habitat have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of vernal pools and annual grasslands that constitute PCEs of SJVOG designated critical habitat; some of these PCEs would be permanently removed and their functionality temporarily disturbed as result of implementing Covered Activities. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit SJVOG designated critical habitat. These AMMs are described in Chapter 2, Covered Activities (see Tables 2-2 and 2-4).

Additional AMMs are incorporated into this species’ conservation strategy. During implementation of construction and Class 2 O&M Covered Activities, vernal pools/swales, which are PCEs of SJVOG designated critical habitat, would be avoided to the maximum extent practicable, with a marked and monitored minimum 250-foot buffer (VP-1 and VP-2; see also Table 5-14). These habitat-specific measures would maintain the existing hydrological integrity of vernal pools/swales (i.e., SJVOG PCEs) located within the HCP Planning Area. Thus, the existing habitat quality of the SJVOG PCEs in the HCP Planning Area would be maintained during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support SJVOG Biological Goal #1.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities and the habitat-specific conservation measures (i.e., VP-1 and VP-2) are a comprehensive, integrated set of measures designed to conserve the existing quality of SJVOG PCEs within SCE's ROW and the HCP Planning Area. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-12, these AMMs avoid or minimize direct and indirect impacts on PCEs of SJVOG designated critical habitat that would result from implementing construction and O&M Covered Activities, and achieve SJVOG Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Designated Critical Habitat PCEs.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, VP-1, and VP2-), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and SJVOG Biological Goals #1 and #2 by retaining a greater amount intact PCEs of SJVOG designated critical habitat in the HCP Planning Area (than would otherwise have occurred without these avoidance measures). The mapping of sensitive areas (AMMs C-3 and O&M-3), including vernal pools that are SJVOG PCEs, guides and informs SCE and SCE contract workers in avoiding PCEs to the extent feasible while implementing Covered Activities. Further, establishing a 250-foot-wide buffer zone around vernal pool/swale habitat while implementing Class 2 O&M Covered Activities (AMM VP-1) maintains habitat quality in the SJVOG PCEs in the HCP Planning Area. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on SJVOG designated critical habitat in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on SJVOG PCEs. Preconstruction surveys, compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), and monitoring of ground-disturbing activities in natural vegetation near vernal pool/swale habitat (AMM VP-2) ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent PCEs of SJVOG designated critical habitat.
- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-6, C-8, C-9, C-11, O&M-2, O&M-6, O&M-7, O&M-9, O&M-10, O&M-12, and O&M-14) minimize direct and indirect effects on designated critical habitat, thereby maintaining habitat quality for SJVOG PCEs in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify PCEs of SJVOG designated critical habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3). Restricting Covered Activities in and around SJVOG PCEs (e.g., no fueling or maintenance of vehicles within 250 of aquatic features [AMMs C-8 and O&M-9], implementing erosion control measures near aquatic features [AMMs C-9 and O&M-10], and staying on existing roads [AMM O&M-6]) maintains the quality of PCEs of SJVOG designated critical habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, O&M-7), controlling weeds (AMMs C-6 and O&M-14), and revegetating

disturbed areas (AMM O&M-12), minimize indirect effects on PCEs of SJVOG designated critical habitat, thereby maintaining habitat quality in the HCP Planning Area.

By implementing measures in Table 5-12 during construction and O&M Covered Activities, PCEs of SJVOG designated critical habitat Units 6C and D would be avoided to the maximum extent practicable; thus, two of the three biological goals of the SJVOG conservation strategy (SJVOG Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented during O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on designated critical habitat. Several AMMs may not be feasible under emergency conditions, including, but not limited to, pre-activity surveys (O&M-5). SCE would maintain a biologist on-call to support habitat avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where designated critical habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing habitat conditions would be maintained in most designated critical habitat in the HCP Planning Area through the implementation of planning-design, construction, O&M, and habitat-specific AMMs (Table 5-12), the functionality of some PCEs of SJVOG designated critical habitat would be permanently lost or temporarily disturbed as a result of implementing Covered Activities. SJVOG Biological Goal #3 would be provided through acquisition of habitat comparable to SJVOG PCEs (including vernal pools/swales and annual grassland) to offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM VP-3 in Table 5-14 and additional detail in Table 5-15). SJVOG Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 44.74 acres of vernal pool habitat (including both 11.34 acres of vernal pools/swales and 33.40 acres of annual grassland) at a USFWS-approved conservation bank(s).
- Preserve in perpetuity 44.74 acres of vernal pool habitat (including both 11.34 acres of vernal pools/swales and 33.40 acres of annual grassland) through acquisition of fee-title or purchase of conservation easement for a USFWS-approved mitigation site, which would then be managed in perpetuity by an approved “turnkey” land management entity.
- Use a combination of the above options to mitigate unavoidable impacts on HOSP PCEs.

The preservation of vernal pool habitat would permanently protect high-quality habitat for HOSP in perpetuity. Compensatory mitigation would include permanently protected vernal pool habitat. This compensatory mitigation acreage would benefit the species by increasing the amount of vernal pool habitat, which contains SJVOG PCEs, that is protected in perpetuity. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area.

A portion of the 21.00 acres of PCEs in SJVOG designated critical habitat is in actively managed and frequently disturbed locations that are less likely to support this species. Temporary disturbance and permanent direct loss of

PCEs of SJVOG designated critical habitat, and disturbance of lands within the watershed supporting SJVOG designated critical habitat in the HCP Planning Area would be mitigated by preserving 44.74 acres of better quality habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or SCE fee-title or conservation easement acquisition of a USFWS-approved property.

SJVOG AMMs would restrict the potential for indirect effects to alter watersheds that support existing hydrology for vernal pools (i.e., SJVOG PCEs). Because facilities being proposed in the HCP Planning Area are generally narrow and linear, they would have little intersection with existing watersheds for vernal pools. Mitigation land would be of greater value habitat than these marginal habitats that would be affected because the mitigation acreage would be located in relatively undisturbed landscapes of natural vegetation consisting of vernal pool grassland. Therefore, through this compensatory mitigation, SJVOG Biological Goal #3 would be attained (see Table 5-12).

Table 5-12 summarizes the SJVOG AMMs and mitigation that constitute the SJVOG conservation strategy within the HCP Planning Area. By fulfilling the biological goals for this species, the Cross Valley Line would support the continued functionality of PCEs of SJVOG designated critical habitat in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-12
Summary of Conservation Strategy for San Joaquin Valley Orcutt Grass[1]

Biological Goal	Applicable Measures
SJVOG Goal 1: Avoid and minimize impacts on primary constituent elements of designated critical habitat for San Joaquin Valley Orcutt grass during construction Covered Activities to the maximum extent practicable	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-6 Implement Noxious Weed and Invasive Plant Control Plan C-8 Restrict Equipment Fueling and Maintenance near Waterways C-9 Control Erosion Near Waterways and Suitable Habitat for Covered Species C-11 Construct Locking Gates at Strategic Locations on Access Roads VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat
SJVOG Goal 2: Avoid and minimize impacts on primary constituent elements of designated critical habitat for San Joaquin Valley Orcutt grass resulting from O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-9 Restrict Equipment Fueling and Maintenance near Waterways O&M-10 Control Erosion near Waterways and Suitable Habitat for Covered Species O&M-12 Revegetate Temporarily Disturbed Areas O&M-14 Prepare and Implement Noxious Weed and Invasive Plant Control Plan VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat

Table 5-12 Summary of Conservation Strategy for San Joaquin Valley Orcutt Grass[1]	
Biological Goal	**Applicable Measures**
SJVOG Goal 3: Contribute to regional conservation of habitat for San Joaquin Valley Orcutt grass to compensate for impacts resulting from construction and O&M Covered Activities.	VP-3 Mitigate Unavoidable Impacts on Vernal Pool/Swale Habitat

Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; SJVOG = San Joaquin Valley Orcutt grass

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.2.13 Spiny-Sepaled Button-Celery (SSBC)

5.2.13.1 SSBC Biological Goals

- SSBC Goal 1: Avoid and minimize direct and indirect impacts on SSBC and its occupied habitat resulting from construction Covered Activities to the maximum extent practicable to help maintain viable habitat for SSBC within the HCP Planning Area over the 30-year ITP.
- SSBC Goal 2: Avoid and minimize impacts on SSBC and its occupied habitat resulting from O&M Covered Activities to the maximum extent practicable to help maintain viable habitat for SSBC within the HCP Planning Area over the 30-year ITP term.
- SSBC Goal 3: Contribute to local and/or regional conservation of SSBC by preserving a minimum of 18.31 acres of high-quality habitat suitable for or known to be occupied by SSBC.

5.2.13.2 SSBC Conservation Strategy

As described in Chapter 2, Covered Activities, several measures have been implemented during the planning and design stages of the project to avoid and minimize direct effects on Covered Species, including SSBC occupied habitat. These planning-design measures contribute to the SSBC conservation strategy as follows:

- Inventorying sensitive biological resources (AMM PD-1) provided detail about the environmental setting and sensitive biological resources, such as SSBC and its occupied habitat, that should be considered and further evaluated. This effort provided the baseline for developing the SSBC conservation strategy.
- Designing project features to avoid or minimize effects on biological resources to the maximum extent practicable (AMM PD-2) contributed to both to retaining a greater amount intact occupied habitat for SSBC (than would otherwise have occurred without this avoidance design) and, thus, maintaining viable populations of SSBC in the HCP Planning Area.

- Designing roads to avoid sediment loading to surface waterways, such as vernal pools/swales (AMM PD-3), helped to minimize indirect effects on SSBC occupied habitat, thereby maintaining habitat quality for this species in the HCP Planning Area.

These AMMs avoid and minimize direct and indirect impacts on SSBC occupied habitat. These efforts benefit SSBC populations in the HCP Planning Area during the 30-year ITP term and over the life of the Cross Valley Line project.

Nonetheless, not all potential effects on this plant's habitat have been avoided during planning and design. SCE would conduct Covered Activities in the vicinity of vernal pools/swales, puddles, and stock ponds/basins, some of which provide are habitat occupied by SSBC. However, the implementation of AMMs incorporated into construction and O&M Covered Activities would benefit SSBC. These AMMs are described in Chapter 2, Covered Activities, (see Tables 2-2 and 2-4).

Additional AMMs are incorporated into this species' conservation strategy. During implementation of construction and Class 2 O&M Covered Activities, vernal pools/swales, puddles, and stock ponds/basins, all of which are suitable habitat for SSBC, would be avoided to the maximum extent practicable through a marked and monitored minimum 250-foot buffer (VP-1 and VP-2; see also Table 5-14). These habitat-specific AMMs would maintain the existing hydrological integrity of occupied SSBC habitat and reduce the likelihood of construction and O&M Covered Activities affecting SSBC plants or their habitat. Thus, the existing habitat quality for SSBC in the HCP Planning Area would be maintained during implementation of construction and O&M Covered Activities over the 30-year ITP term, to support SSBC Biological Goal #1.

In addition to the habitat-specific measures described above, species-specific measures are incorporated into the SSBC conservation strategy. During implementation of construction and Class 2 O&M Covered Activities, herbicide spraying would be prohibited within 100 feet of occupied SSBC habitat (SSBC-1) (see also Table 5-14). This species-specific AMM would avoid and minimize impacts on SSBC that may otherwise result from implementing Covered Activities, to support SSBC Biological Goal #2.

Together, the planning-design, construction, and O&M AMMs that have been incorporated into all Covered Activities, the habitat-specific conservation measures (i.e., VP-1 and VP-2), and the species-species measure (SSBC-1) are a comprehensive, integrated set of measures designed to conserve SSBC populations and the existing quality of SSBC occupied habitat within SCE's ROW and the HCP Planning Area. These include the measures necessary to ensure that effective avoidance and minimization occurs consistently during implementation of each Covered Activity over the 30-year ITP term. As summarized below and in Table 5-13, these AMMs avoid or minimize direct and indirect impacts on occupied habitat for SSBC that would result from implementing construction and O&M Covered Activities, and achieve SJVOG Biological Goals #1 and #2.

- **Avoidance Measures to Retain Existing Habitat and Maintain Viable Species Population.** Several AMMs (specifically C-3, O&M-1, O&M-3, O&M-4, O&M-5, VP-1, and VP2-), through habitat avoidance, contribute to both HCP Biological Goals #1 and #2 and SSBC Biological Goals #1 and #2 by retaining a greater amount intact occupied SSBC habitat (than would otherwise have occurred without these avoidance measures) and, thus, maintaining viable populations of SSBC in the HCP Planning Area. The mapping of sensitive areas (AMMs C-3 and O&M-3), including vernal pools, puddles, and stock ponds/basins that are occupied SSBC habitat, guides and informs SCE and SCE contract workers in avoiding suitable habitat to the extent feasible while implementing Covered Activities. Further, establishing a 250-foot-wide buffer zone around vernal pool/swale habitat while implementing Class 2 O&M Covered Activities (AMM VP-1) maintains habitat quality for SSBC in the HCP Planning Area. Through preparing an O&M environmental compliance plan (AMM O&M-1) and conducting an environmental screening process prior to ground-disturbing activities (AMM O&M-4), SCE can determine potential effects on SSBC in the vicinity of a work area and implement additional AMMs as necessary to further avoid and minimize impacts on SSBC and its occupied habitat. Preconstruction surveys, compliance monitoring during Class 2 O&M Covered Activities (AMM O&M-5), and monitoring of ground-disturbing activities in natural vegetation near vernal pool/swale habitat (AMM VP-2) ensures compliance with habitat avoidance efforts and other AMMs and minimizes the potential of indirect effects on adjacent habitat for SSBC. Lastly, prohibiting herbicide use within 100 feet of habitat occupied by SSBC maintains habitat quality for this species and supports a viable population of SSBC in the HCP Planning Area.

- **Minimization Measures to Maintain Habitat Quality.** Several AMMs (specifically C-1, C-4, C-6, C-8, C-9, C-11, O&M-7, O&M-9, O&M-10, O&M-12, and O&M-14) minimize direct and indirect effects on SSBC occupied habitat, thereby maintaining habitat quality for this species in the HCP Planning Area. Worker awareness training (AMMs C-1 and O&M-2) provide information to SCE and SCE contract workers to teach them identify SSBC suitable habitat and understand the important of complying with the ESA maps and field delineations (see AMMs C-3 and O&M-3). Restricting Covered Activities in and around SSBC occupied habitat (e.g., no fueling or maintenance of vehicles within 250 of aquatic features [AMMs C-8 and O&M-9], implementing erosion control measures near aquatic features [AMMs C-9 and O&M-10], and staying on existing roads [AMM O&M-6]) maintains the quality of SSBC occupied habitat in the HCP Planning Area. Other AMMs, by controlling access to the HCP Planning Area (AMMs C-4, C-11, and O&M-7), controlling weeds (AMMs C-6 and O&M-14), and revegetating disturbed areas (AMM O&M-12), minimize indirect effects on SSBC occupied habitat, thereby maintaining habitat quality and species viability in the HCP Planning Area.

By implementing AMMs in Table 5-13 during construction and O&M Covered Activities, SSBC occupied habitat would be avoided to the maximum extent practicable; thus, two of the three biological goals of the SSBC conservation strategy (SSBC Biological Goals #1 and #2) would be achieved.

Several of these measures can be implemented during O&M Covered Activities that occur under emergency conditions; these measures would avoid and minimize direct and indirect effects on SSBC occupied habitat. Several AMMs may not be feasible under emergency conditions, including, but not limited to, pre-activity surveys (O&M-5). SCE would maintain a biologist on-call to support habitat avoidance and minimization during emergencies. To the extent practicable, this monitor would identify where SSBC occupied habitat is adjacent to the emergency action so that the habitat can be avoided to the maximum extent possible and apply the prepared maps of sensitive areas (AMM O&M-3) and O&M environmental compliance plan (AMM O&M-1) for O&M Covered Activities.

Although existing habitat conditions would be maintained in most SSBC occupied habitat in the HCP Planning Area through the implementation of planning-design, construction, O&M, and habitat-specific AMMs (Table 5-1), some SSBC occupied habitat cannot be avoided and would be permanently lost or temporarily disturbed as a result of implementing Covered Activities. SSBC Biological Goal #3 would be provided through acquisition of vernal pool/swale habitat mitigation that would offset all temporary disturbance, permanent direct loss, and permanent indirect effects (see AMM VP-3 in Table 5-14 and additional detail in Table 5-15). SSBC Biological Goal #3 would be satisfied through one of the following:

- Purchase mitigation credits equivalent to 18.31 acres of vernal pool habitat suitable to and/or occupied by SSBC at a USFWS-approved conservation bank(s).

- Preserve in perpetuity 18.31 acres of vernal pool habitat suitable to and/or occupied by SSBC at a USFWS-approved "turnkey" mitigation site.

- Use a combination of the above options to mitigate unavoidable impacts on SSBC.

The preservation of vernal pool habitat would permanently protect high-quality habitat for SSBC in perpetuity. Compensatory mitigation would include permanently protected habitat for SSBC. This compensatory mitigation acreage would benefit the species by increasing the amount of habitat that is protected in perpetuity at a local and regional scale. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This compensatory mitigation would contribute towards the local and regional conservation of SSBC and its habitat.

Temporary disturbance of habitat, loss of individuals, permanent direct loss of SSBC occupied habitat, and disturbance of lands within the watershed supporting SSBC habitat in the HCP Planning Area would be mitigated by preserving better quality SSBC habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through SCE fee-title or conservation easement acquisition of a USFWS-approved property.

SSBCAMMs would restrict the potential for indirect effects to alter watersheds that support existing hydrology for vernal pools. Because facilities being proposed in the HCP Planning Area are generally narrow and linear, they would have little intersection with existing watersheds for vernal pools and other habitats suitable for SSBC. In addition, a portion of the affected SSBC occupied habitat is in actively managed and frequently disturbed locations, such as roadside puddles and basins/stock ponds, or in predominantly agricultural and/or developed landscapes that are less likely to support SSBC. Mitigation land would be of greater value habitat for SSBC than these marginal habitats that would be affected because the mitigation acreage would be located in relatively undisturbed landscapes of natural vegetation consisting of vernal pool grassland. Therefore, through this compensatory mitigation, SSBC Biological Goal #3 would be attained (Table 5-13).

Table 5-13 summarizes the SSBC AMMs and mitigation that constitute the SSBC conservation strategy. By fulfilling the biological goals for this species, the Cross Valley Line would support the persistence of SSBC in the HCP Planning Area and the adjacent region of the San Joaquin Valley.

Table 5-13 Summary of Conservation Strategy for Spiny-Sepaled button-celery[1]	
Biological Goal	**Applicable Measures**
SSBC Goal 1: Avoid and minimize impacts on spiny-sepaled button-celery and its habitat during construction Covered Activities to the maximum extent practicable.	PD-1 Inventory Sensitive Biological Resources to Inform Project Planning and Design PD-2 Plan and Design Project Features to Avoid and/or Minimize Effects on Biological Resources C-1 Conduct Environmental Awareness Training for Workers C-3 Map Environmentally Sensitive Areas C-4 Restrict Vehicle Speeds and Travel C-6 Implement Noxious Weed and Invasive Plant Control Plan C-8 Restrict Equipment Fueling and Maintenance near Waterways C-9 Control Erosion Near Waterways and Suitable Habitat for Covered Species C-11 Construct Locking Gates at Strategic Locations on Access Roads VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat
SSBC Goal 2: Avoid and minimize impacts on primary constituent elements of designated critical habitat for Spiny-sepaled button-celery resulting from O&M Covered Activities to the maximum extent practicable.	O&M-1 Prepare Operation and Maintenance Environmental Compliance Plan O&M-2 Conduct Environmental Awareness Training for Workers O&M-3 Map Environmentally Sensitive Areas O&M-4 Conduct Environmental Screening Process O&M-5 Conduct Pre-Activity Surveys and Monitoring Class 2 O&M Activities O&M-6 Stay on Existing Access Roads O&M-7 Restrict Vehicle Speeds and Travel O&M-9 Restrict Equipment Fueling and Maintenance near Waterways O&M-10 Control Erosion near Waterways and Suitable Habitat for Covered Species O&M-12 Revegetate Temporarily Disturbed Areas O&M-14 Prepare and Implement Noxious Weed and Invasive Plant Control Plan VP-1 Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat VP-2 Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat SSBC-1 Restrict Herbicide Use near Occupied Spiny-Sepaled Button-Celery Habitat
SSBC Goal 3: Contribute to regional conservation of spiny-sepaled button-celery to compensate for impacts resulting from construction and O&M Covered Activities.	SSBC-2 Mitigate Unavoidable Impacts on Occupied Spiny-Sepaled Button Celery Habitat

Notes: AMM = avoidance and minimization measure; C = construction; O&M = operation and maintenance; PD = planning and design; SSBC = spiny-sepaled button-celery

[1] Text of construction and O&M AMMs are located in Table 2-2 and Table 2-4, respectively. Text of species- and habitat-specific measures is located in Table 5-14.

Source: Data compiled by AECOM in 2013

5.3 SUMMARY OF AVOIDANCE, MINIMIZATION, AND MITIGATION

This section consists of two tables. The first summarizes the species- and habitat-specific AMMs of this HCP's conservation strategy (Table 5-14). These measures are in addition to those incorporated into the Covered Activities and provided in Tables 2-2 and 2-4.

The second table in this section provides a summary of the temporary disturbance and permanent loss of habitat for each species (based on Chapter 4), the mitigation described and explained in this Conservation Strategy, including the acreage, type, and location of compensatory mitigation that SCE would preserve in perpetuity for the benefit of the HCP covered species and the HCP biological goals (Table 5-15).

5.3.1 MITIGATION STRATEGY

To satisfy the ITP requirement to minimize and mitigate to the maximum extent practicable, and to meet HCP Biological Goal #3 of contributing to the regional conservation of each Covered Species and its habitat, SCE is proposing to: (1) purchase mitigation credits at a USFWS-approved conservation bank(s); (2) preserve by fee title or by purchase of conservation easement occupied habitat for Covered Species at a USFWS-approved mitigation site, to be managed in perpetuity by a certified land-manager approved by the USFWS; (3) enhance (riparian) habitat inside the HCP Planning Area boundary (see Appendix F); (4) implement a combination of the above approaches; or (5) enact another means acceptable to USFWS. These options are outlined below, and summarized by species in Table 5-15.

5.3.1.1 Approved Habitat Conservation Bank

A mitigation bank is privately or publicly owned land that is managed for its natural resource values. Mitigation banks may sell species credits, wetland credits, or both. The bank sells credits to private or public project proponents to offset their impacts, and the money is used to improve and maintain the resources. Conservation banks must be approved by USFWS and CDFW (and the U.S. Army Corps of Engineers if the bank is also selling jurisdictional wetland credits). In exchange for permanently protecting the land, the bank operator is allowed by the Wildlife Agencies to sell species credits to project proponents who need to satisfy legal requirements for compensating for the impacts of projects that affect listed species or their habitat. A conservation or mitigation bank is a free-market enterprise that performs the following functions:

- Offers landowners economic incentives to protect natural resources.
- Saves project proponents' time and money by providing them with the certainty of preapproved compensation lands.
- Provides for long-term protection and management of habitat.

The goals of private mitigation banks are similar to those of regional HCPs.

Habitat conservation banks provide mitigation habitat credits that can be purchased by a ITP applicant, such as SCE, to satisfy ITP mitigation requirements. If credits are available and if the project footprint is within the bank's service area, habitat conservation banks are an option for offsetting impacts on species habitats while conserving species habitat on a local or regional scale. Some habitat conservation banks, however, are only approved by USFWS and CDFW, which may be problematic for an applicant if there is a species that is both Federally and State listed, as a bank that is not CDFW-approved may not satisfy mitigation requirements of a CDFW 2081 permit.

In order to have a USFWS-approved bank also approved by CDFW, existing banking documents, such as the Bank Enabling Instrument, may have to be modified to also comply with CDFW document guidelines. CDFW cannot guarantee the time frame for State review and approval of a bank; however, it can be expected to require 12 to 18 months. However, bank owners have the ability to contract with a project proponent, such as SCE, to reserve the habitat credits at a bank while the State approval process is being conducted. Further, CDFW has the ability to condition the terms of its 2081 ITP to allow ITP mitigation requirements to be met in accordance with this time frame.

SCE is currently considering using USFWS-approved habitat mitigation banks to offset impacts on some Covered Species, including potentially two banks located in Tulare County:

- Sand Creek Conservation Bank is a USFWS-approved conservation bank that provides mitigation credits for VPFS, CTS, and SJKF. This bank is not approved by CDFW. Because CTS and SJKF are both Federally and State listed, this bank must be approved by CDFW in order to satisfy mitigation requirements of the HCP ITP and the forthcoming 2081(b) ITP from CDFW.

- French Camp Conservation Bank is a USFWS-approved conservation bank that provides mitigation credits for VELB. This bank is not approved by CDFW. However, because VELB is only Federally listed, CDFW approval of this bank is not required for SCE to purchase VELB habitat mitigation credits.

5.3.1.2 Approved Permittee-Responsible or “Turnkey” Mitigation Site

SCE may acquire lands from willing sellers in fee title or through establishment of conservation easements to create a habitat preserve. Lands would only be acquired from willing sellers and lands must meet one or more of the HCP or species biological goals. Conservation easements would be used when the property owner wishes to enter that type of arrangement rather than sell land in fee title. The terms of each conservation easement may be tailored to each landowner and parcel, but would be consistent with goals of the conservation strategy.

One potential option for a permittee-responsible mitigation site is Tolle-Rodman Ranch. Tolle-Rodman Ranch is a 2,058-acre site located in Fresno County, California. SCE is considering purchasing a portion of the Tolle-Rodman Ranch as a habitat preserve site that provides occupied habitat for the HCP’s VPFS and CTS conservation strategy, and possibly also for the VPTS, WSFT, BUOW, and SJKF conservation strategies. SCE may pursue other sites for mitigation in conjunction with or instead of the Tolle-Rodman Ranch site.

In order to use a site as for a HCP habitat preserve, several documents would need to be prepared, reviewed, and approved by both USFWS and CDFW. These documents include: a long-term management plan, a funding analysis with endowment calculation, and a conservation easement. These documents would use a joint format for both USFWS and CDFW. SCE would establish a nonwasting endowment to manage the site in perpetuity and a perpetual conservation easement would be recorded. Conservation easement and endowment holders would also need to be identified and approved by both agencies. The land would be managed by a Land Trust Alliance accredited entity. Both USFWS and CDFW have indicated that they can condition their ITPs to allow for a 12- to

18-month timeframe (after issuance of the ITPs) to review and approve this site to satisfy ITP mitigation requirements.

5.3.1.3 HCP Planning Area Riparian Habitat Enhancement

Through implementation of AMMs, construction and O&M Covered Activities would not cause temporary disturbance or permanent loss of riparian habitat. The annual pruning of up to 0.02 acre of riparian trees would temporarily disturb riparian vegetation; it is possible to enhance the riparian habitat on-site. The biological functionality of riparian habitat would be enhanced along the St. John's River within 12 months, in accordance with the Riparian Habitat Enhancement Plan (Appendix F).

There may also be opportunities to offset impacts on other species' habitats through on-site habitat restoration and/or protection.

5.3.1.4 Combination of Mitigation Approaches

SCE may elect to pursue a combination of all of the above options. As summarized in Table 5-15, a mitigation bank is the best option for VELB and on-site restoration is the best option for riparian and SSBC habitat (if impacts occur). The bank and a "turnkey" mitigation site both can provide mitigation opportunities for a variety of species (i.e., VPFS, CTS, SJFK), and the "turnkey" mitigation site may be able to provide additional mitigation for other species as well. SCE may elect to secure mitigation at the bank to satisfy HCP ITP mitigation requirements while the "turnkey" mitigation site is pending review and approval by both USFWS and CDFW.

5.3.2 MITIGATION JUSTIFICATION

SCE has proposed compensatory mitigation for most species, as summarized in Table 5-15. As outlined in the species-specific conservation strategies above, the proposed compensatory mitigation would contribute to regional conservation of Covered Species and their suitable habitats through one or more of the approaches outlined above.

The amount of compensatory mitigation was determined through evaluation of a number of factors: (1) species status; (2) environmental baseline; (3) location, duration, type, and frequency of impacts on species and habitat; (4) resiliency of habitat; and (5) type, location, quality, and long-term security of the compensatory habitat.

For all species where habitat was affected, a greater amount of compensatory habitat was dedicated for direct and indirect permanent impacts than for temporary impacts to upland habitats. The justification for this is that this habitat is permanently lost, whereas the habitats that are temporarily affected are expected to recover within a 12-month period and the upland habitats that are indirectly affected are expected to persist in the landscape. As described in the species-specific conservation strategies, the planning-design, construction, O&M, and species- and habitat-specific AMMs avoid and minimize most of these temporary and indirect impacts; therefore, less compensation is proposed for these types of impacts.

As discussed in Chapter 3, Environmental Setting/Biological Resources, the habitat east of the Friant-Kern Canal is of much higher quality that the areas west of the Friant-Kern Canal. East of the canal, the land cover is primarily large contiguous areas of grassland and other natural land cover. West of the canal, the land cover is primarily a discontinuous mosaic of developed or agricultural lands that are actively managed and frequently disturbed, and, in general, that are less likely to support Covered Species. Nonetheless, proposed compensation for impacts on suitable habitat west of the canal relative would be the same as is proposed for impacts east of the canal.

Temporary disturbance of habitat, loss of individuals, permanent direct loss of habitat, and disturbance of lands within the watershed supporting habitat in the HCP Planning Area would be mitigated by preserving better quality habitat, and a greater area of habitat, in perpetuity at a USFWS-approved habitat conservation bank or through a USFWS-approved “turnkey” mitigation property. Mitigation land would be of greater value habitat for VPFS than these marginal habitats that would be affected because the mitigation acreage would be located in relatively undisturbed landscapes of natural vegetation that are known to support VPFS and provide suitable habitat for others. Where habitats for species overlap, mitigation acreage can provide suitable mitigation habitat for multiple species (Table 5-15).

The proposed compensatory mitigation sites would be permanently protected and occupied habitat for Covered Species. This compensatory mitigation acreage would benefit the Covered Species by increasing the amount of occupied habitat that is protected in perpetuity. The compensatory mitigation would also be of higher conservation value because contiguous blocks of habitat would be preserved as compared to non-contiguous habitat that would be affected within the HCP Planning Area. This mitigation would contribute towards the regional conservation of Covered Species and their habitat. As such, the proposed compensatory mitigation, which is summarized in Table 5-15, offsets impacts on Covered Species resulting from implementing Covered Activities to the maximum extent practicable.

Table 5-14
Conservation Strategy Measures for Specific Species or Habitats

Code	Title	Description
VP-1	Avoid and/or Minimize Effects on Vernal Pool/Swale Habitat	During construction and Class 2 O&M activities, SCE and SCE contract workers and equipment would avoid vernal pools, vernal swales, basins and stock ponds to the maximum extent practicable, by fencing or staking a minimum buffer of 250 feet around all vernal pools, vernal swales, basins and stock ponds in the HCP Planning Area. If a full 250-foot buffer area around a particular feature would not allow construction or O&M Covered Activity to occur, a smaller buffer of the maximum size possible would be delineated by SCE or its designated biologist prior to the implementation of construction or O&M Covered Activity. The buffer would be delineated in the field through the placement of high-visibility flagging, stakes, and/or fencing by SCE or its designated biologist. The designated biologist would monitor this buffer for avoidance during the implementation of construction and O&M Covered Activities and assure that no activities, including vegetation and soil disturbance, occur within the marked boundary of the buffer avoidance.
VP-2	Monitor Activities near Marked Buffers around Vernal Pool/Swale Habitat	A biological monitor employed by SCE and experienced with vernal pool habitats and associated vernal pool flora and fauna would be present during all construction and Class 2 O&M Covered Activities implemented within 500 feet of a vernal pool or swale, basin, stock pond, or puddle occurring in annual grassland. The biologist can temporarily stop work if they determine that the protected feature is being encroached up by a construction or O&M Covered Activity that may impact the feature designated for avoidance.

Table 5-14 Conservation Strategy Measures for Specific Species or Habitats		
Code	**Title**	**Description**
VP-3	Mitigate Unavoidable Impacts on Vernal Pool/Swale Habitat	SCE would mitigate for the temporary disturbance and permanent direct and indirect loss of vernal pool/swale habitat suitable for vernal pool Covered Species resulting from construction or O&M Covered Activities by providing compensatory habitat through either: (1) purchasing mitigation credits at a USFWS-approved conservation bank(s); (2) preserving in perpetuity compensatory habitat for Covered Species at a USFWS-approved "turnkey" mitigation site; (3) through a combination of the above; (4) or through another means acceptable to the USFWS.
VELB-1	Mark and Avoid Buffer Areas around Elderberries	Around elderberries with one or more stems greater than or equal to 1 inch in diameter, SCE would establish buffer areas that are a minimum 100 feet in width measured from the dripline of the plant (USFWS, 1999). If a full 100-foot buffer area cannot be established around a particular elderberry, a smaller buffer of the maximum size possible (and at least 20 feet from the dripline of the shrub) would be established. Prior to implementation of construction or Class 2 O&M Covered Activities, these buffers would delineated in the field through the placement of high-visibility flagging, stakes, and/or fencing by SCE or its designated biologist. Vegetation and soil disturbance would not occur within these buffer areas. These areas would remain marked for avoidance until the Covered Activity is completed.
VELB-2	Mitigate Unavoidable Impacts on Elderberries	Where impacts on valley elderberry longhorn beetle habitat from construction or O&M Covered Activities cannot be avoided, SCE would provide compensatory mitigation in accordance with USFWS guidelines (USFWS, 1999), or another means acceptable to USFWS. Elderberry shrubs that cannot be avoided would be transplanted or replaced at a USFWS-approved facility according to stem count and habitat guidelines (USFWS, 1999). USFWS general compensation guidelines call for replacement of elderberry plants in designated mitigation areas at a ratio from 2:1 to 5:1 for each stem greater than one inch in diameter (USFWS, 1999). Note that replacement ratios are by stem and not by elderberry shrub. In addition, a mix of native plants must be planted at the transplant site. Cuttings from the elderberry shrub to be removed would be used if the cuttings are viable. Otherwise, locally available nursery stock would be used for additional plantings. Implementation of this compensatory mitigation measure is contingent on the species status as a Federally listed species at the time of ITP issuance. Regardless of change in listing status of an HCP Covered Species after ITP issuance, the HCP's conservation strategy for that species must be implemented as described in the permitted HCP document and the ITP terms and conditions.
CTS-1	Conduct Preactivity Clearance Surveys for California Tiger Salamander	Where equipment or materials have been stored overnight, each day, before the start of work, the USFWS-approved biological monitor would check for adult and juvenile California tiger salamander under any equipment to be used that day. If California tiger salamanders are present, they would be allowed to leave on their own volition, before the initiation of Covered Activities for the day. If salamanders are trapped or do not move on their own, a USFWS-approved biologist possessing a valid ESA Section 10(a)(1)(a) permit, or USFWS-approved biologist under an active Biological Opinion, would be used to move the salamander to a nearby ground-squirrel burrow opening or other suitable habitat (USFWS and DFG, 2003).

Table 5-14
Conservation Strategy Measures for Specific Species or Habitats

Code	Title	Description
CTS-2	Cover Excavated Holes or Trenches that could Trap California Tiger Salamanders	To prevent inadvertent entrapment of California tiger salamanders during construction or Class 2 O&M activities, all excavated, step-walled holes or trenches more than 1 foot in depth would be covered by plywood or similar materials at the close of each working day. Escape ramps constructed of earth fill or wooden planks would be installed. When trenches covers are opened again, and before such holes or trenches are filled, they must be thoroughly inspected by a USFWS-approved biologist for trapped animals.
CTS-3	Prohibit Use of Monofilament Netting	Plastic monofilament netting (erosion control matting) or similar material would not be used within the HCP Planning Area because California tiger salamanders may become entangled or trapped. Examples of acceptable substitutes include coconut coir matting, weed-free straw and tackified hydroseeding compounds. Silt fencing required in CTS habitat as part of a SWPPP plan would be installed with appropriate overlapping gaps in the fencing so as to allow CTS passage.
CTS-4	Avoid or Minimize Effects on Burrow Complexes	Prior to ground-disturbing activities (i.e., construction and Class 2 O&M Covered Activities) in all land covers within 1.24 miles of aquatic breeding habitat suitable for California tiger salamander, a USFWS-approved biologist would survey for and flag the presence of ground squirrel and gopher burrow complexes. Where burrow complexes are present within 250 feet of potential work areas and can be avoided, a buffer would be marked to minimize potential disturbance to California tiger salamander. If a 250-foot buffer is not possible, a smaller buffer of the largest size practicable would be established. The buffer would be delineated in the field through the placement of high-visibility flagging, stakes, and/or fencing by SCE or its designated biologist. The designated biologist would monitor this buffer for avoidance during the extent of construction and O&M Covered Activities and assure that no activities, including vegetation and soil disturbance, occur within the marked boundary of the buffer avoidance.
CTS-5	Mitigate Unavoidable Impacts on California Tiger Salamander	SCE would mitigate for the temporary disturbance and permanent direct and indirect loss of breeding habitat suitable for California tiger salamander and the temporary disturbance and permanent direct loss of upland aestivation habitat suitable for California tiger salamander that results from construction or O&M Covered Activities by providing compensatory habitat through either: (1) purchasing mitigation credits at a USFWS-approved conservation bank(s); (2) preserving in perpetuity compensatory habitat for Covered Species at a USFWS-approved “turnkey” mitigation site; (3) through a combination of the above; (4) or through another means acceptable to the USFWS.
WSFT-1	Conduct Preactivity Clearance Surveys for Western Spadefoot Toad	Where construction and Class 2 O&M Covered Activities occur in grasslands within 1.24 miles of suitable western spadefoot toad aquatic habitat, and where equipment or materials have been stored overnight, a USFWS-approved biological monitor would check daily for toads under any equipment to be used that day before the start of work. If western spadefoot toads are present, they would be allowed to leave on their own volition before the initiation of construction activities for the day. If western spadefoot toads are trapped or do not move on their own volition, a USFWS-biologist would trap and move toads to nearby suitable habitat if any are found inside the area marked for avoidance.

Table 5-14 Conservation Strategy Measures for Specific Species or Habitats		
Code	**Title**	**Description**
WSFT-2	Cover Excavated Holes or Trenches that could Trap Western Spadefoot Toad	To prevent inadvertent entrapment of western spadefoot toad during construction or Class 2 O&M activities, all excavated, step-walled holes or trenches more than 1 foot in depth would be covered by plywood or similar materials at the close of each working day. Escape ramps constructed of earth fill or wooden planks would be installed. When trenches covers are opened again, and before such holes or trenches are filled, they must be thoroughly inspected by a USFWS-approved biologist for trapped animals.
BO-1	Conduct Preconstruction Surveys for Burrowing Owl	A USFWS-approved biologist would conduct preconstruction surveys for burrowing owls no more than 14–30 days prior to the start of each new construction phase and prior to Class 2 O&M activities disturbing soil in agricultural row crops or grasslands that may support BUOW. The Nesting Bird Management Plan (Appendix E), which describes preconstruction surveys for BUOW, would be implemented; the most current CDFW protocol would be followed. Surveys would cover grassland areas within a 500-foot buffer from all project construction sites within suitable grasslands habitat, checking for adult and juvenile burrowing owls and owl nests. If owls are detected during surveys, occupied burrows would not be disturbed, where feasible.
BO-2	Establish Exclusion Areas around Occupied Burrows	For construction and Class 2 O&M Covered Activities, buffer areas would be marked around occupied burrows, in accordance with the Nesting Bird Management Plan (Appendix E). No equipment or land disturbance would be allowed in the buffer areas. During the nonbreeding season (September 1 through January 31), the buffer area would extend 160 feet around occupied burrows. During the breeding season (February 1 through August 31), buffer areas would extend 250 feet around occupied burrows. If a full 160-foot or 250-foot- buffer cannot be maintained around a particular burrow, a smaller buffer of the maximum size possible would be delineated in coordination with the USFWS and CDFW.
BO-3	Relocate Owls from Unavoidable Occupied Burrows	Where HCP land-disturbing Construction and Class 2 O&M Covered Activities cannot avoid occupied burrows, passive relocation of on-site owls may be implemented during the nonbreeding season (September 1 to January 31), with prior CDFW approval and in accordance with the Nesting Bird Management Plan (Appendix E). Passive relocation would be accomplished by an approved biologist installing one-way doors on the entrances of burrows that cannot be avoided. The one-way doors would be left in place for 48 hours to ensure the owls have left the burrow. The burrows would then be hand excavated by an approved biologist. Construction and Class 2 O&M Covered Activities would not proceed within 160-feet of occupied burrows until the activity area is deemed to be freed of owls by the approved biologist.
BO-4	Compensate for Unavoidable Loss of Suitable Burrowing Owl Habitat	SCE would mitigate for the temporary disturbance and permanent direct loss of grassland and agricultural row crop habitat suitable for burrowing owl resulting from construction or O&M Covered Activities by providing compensatory habitat through either: (1) purchasing mitigation credits at a USFWS-approved conservation bank(s); (2) preserving in perpetuity compensatory habitat for Covered Species at a USFWS-approved "turnkey" mitigation site; (3) through a combination of the above; (4) or through another means acceptable to the USFWS.

Table 5-14 Conservation Strategy Measures for Specific Species or Habitats		
Code	**Title**	**Description**
Nesting Birds-1	Avoid or Minimize Effects of Construction and Class 2 O&M Activities on Nesting Birds	To avoid or reduce the effects of construction and planned (i.e., non-emergency), Class 2 O&M Covered Activities on bird Covered Species, SCE would implement the in accordance with Nesting Bird Management Plan (Appendix E), which includes the following measures: (A) Construction and Class 2 O&M Covered Activities in and adjacent to riparian land cover would be scheduled during non-nesting periods (September 1 through January 31) (B) No more than two weeks before the construction or Class 2 O&M Covered Activity in riparian land cover that could support nesting birds protected by the Migratory Bird Treaty Act (MBTA), a qualified wildlife biologist would conduct preconstruction surveys of all potential nesting habitat within 500 feet of the construction/O&M site where access is available. (C) If active nests are not identified, no further action is necessary. If active nests are identified during preconstruction surveys, a no-disturbance buffer shall be created around active raptor nests and nests of other special-status birds during the breeding season, or until it is determined that all young have fledged. Typical buffers are 500 feet for raptors and 250 feet for other nesting birds (e.g., waterfowl, and passerine birds). The size of these buffer zones and types of construction activities that are allowed in these areas could be further modified during construction and O&M Covered Activities in coordination with CDFW and USFWS and shall be based on existing noise and disturbance levels in the HCP Planning Area.
Nesting Birds-2	Mitigate Unavoidable Impacts	The biological functionality of riparian habitat would be enhanced along the St. John's River within 12 months, in accordance with the Riparian Habitat Enhancement Plan (Appendix F).
SJKF-1	Conduct Surveys for Kit Fox during Construction and Class 2 O&M Activities within or Adjacent to Suitable Kit Fox Habitat	For ground-disturbing construction and non-emergency Class 2 O&M Covered Activities implemented over the 30-year ITP term, surveys for San Joaquin kit fox would be conducted by an approved biologist within a 200-foot area surrounding the facility footprints, graded work-areas, and un-graded work areas, no less than 14 days and no more than 30 days prior to the start of an Covered Activity. Surveys would identify San Joaquin kit fox habitat features at the Covered Activity site, and evaluate their potential use by this species. The status of all potential dens would be defined (USFWS, 2011), and mapped. Written results of the preconstruction/pre-activity surveys would be sent to the USFWS within five days after survey completion and prior to start of ground disturbance and/or start of the covered-activity. If a known or suspected natal /pupping den is discovered in or within 200 feet of a facility footprint/ work area, the USFWS would be immediately notified. The den would not be disturbed or destroyed without prior written authorization by the USFWS. Because a great percentage of occupied dens show no evidence of use, and because the kit foxes change dens often, the status of a given den may change frequently and abruptly. All potential dens found in or within 200 feet of a facility footprint/graded work area shall be monitored by an approved biologist for at least three consecutive nights to determine if the den is in use or has been used in the past. Evidence of use may include kit fox sign such as tracks, scat, and/or prey remains, current spotlighting or radio telemetry data, and CNDDB or other records. If the den is in use or has been used, the den would then be monitored by an approved biologist for an additional three consecutive days with tracking medium or infra-red beam camera to determine the current use.

Table 5-14 Conservation Strategy Measures for Specific Species or Habitats		
Code	**Title**	**Description**
		If no kit fox activity is observed during this second three-day period, dens located within facility footprint or graded work-area would be immediately destroyed under the oversight of the authorized biologist to preclude subsequent use by kit fox. The entire den would be carefully excavated, filled with soil, and compacted to assure that kit fox cannot reenter the den while the Covered Activity is being implemented. If kit fox activity is observed at a den located within facility footprint or graded work-area during this second three day period, the den shall be monitored for least five additional days (USFWS, 2011), and the authorized biologist or SCE would immediately contact the USFWS for additional guidance.
SJKF-2	Establish Buffers Around Active Kit Fox Dens	Ground disturbing construction and non-emergency Class 2 O&M Covered Activities implemented over the 30-year ITP term must avoid San Joaquin kit fox dens located within 200 feet of facility footprints, graded work areas, ungraded work areas, and off-road travel corridors. The size of the exclusion buffer-area around each den would have a radius measured outward from the entrance or cluster of entrances due to the length of the dens underground. The following distances are minimums, and if they cannot be followed, the USFWS would be contacted: • Potential Den = 50-feet buffer zone • Atypical Den = 50-feet buffer zone • Known Den = 100-200 feet buffer zone • Natal/Pupping Den (occupied and unoccupied) = contact USFWS To ensure protection, the buffer-area would be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by San Joaquin kit foxes. Acceptable fencing for known dens would be untreated wood particle-board, orange construction fencing, or fencing approved by the USFWS that has openings for kit fox ingress/egress and keeps humans and equipment out. However, fencing of potential dens may be limited to placement of 4-6 flagged stakes each 50-feet from the den entrances(s). SCE would assure that the buffer-zone exclusion fencing is maintained through weekly monitoring until Covered Activities are completed at the site. All fencing would be removed after activities are completed. If kit fox occupancy is determined at a given site or within 200 feet of a covered-activity site during implementation of AMM-SJKF-1, implementation of that Covered Activity would immediately be halted and the USFWS would be contacted.
SJKF-3	Cover Excavated Holes and Trenches	To prevent accidental entrapment of kit fox or other animals during construction and Class 2 O&M Covered Activities, all excavated holes, ditches, or trenches greater than one feet deep would be covered at the end of each work day by suitable materials, or escape routes constructed of earthen materials or wooden planks would be provided. After opening and before filling, such holes, ditches, and trenches would be thoroughly inspected buy an authorized biologist for trapped animals.
SJKF-4	Visually Inspect Stored Tubular or Open-Ended Materials and Equipment	In all Covered Activity sites, any pipes, culverts, or other tubular or open-ended materials and equipment that are stored at an activity site for one or more over night periods would be inspected for animals prior to, moving, burying, capping, or moving the pipe in any way to assure that no animals are present within the materials or equipment. If a San Joaquin kit fox is discovered inside a pipe, that section of pipe would not be moved until the USFWS has been consulted.
SJKF-5	Monitor O&M Activities near Active Kit Fox Dens	Monitoring would occur if San Joaquin kit fox dens are documented within 200 feet of Class 2 O&M Activities, in accordance with USFWS guidelines (USFWS, 2011).

Table 5-14 Conservation Strategy Measures for Specific Species or Habitats		
Code	**Title**	**Description**
SJKF-6	Restrict Rodenticide Use	Rodenticide use would be prohibited by SCE and SCE contract workers within the HCP Planning Area over the 30-year ITP term to avoid poisoning of kit fox or their prey, per USFWS guidelines (USFWS, 2011).
SJKF-7	Mitigate Unavoidable Impacts	SCE would mitigate for the temporary disturbance and permanent direct loss of grassland and agricultural lands suitable for San Joaquin kit fox resulting from construction or O&M Covered Activities by providing compensatory habitat through either: (1) purchasing mitigation credits at a USFWS-approved conservation bank(s); (2) preserving in perpetuity compensatory habitat for Covered Species at a USFWS-approved "turnkey" mitigation site; (3) through a combination of the above; (4) or through another means acceptable to the USFWS.
SSBC-1	Restrict Herbicide Use near Occupied Spiny-Sepaled Button-Celery Habitat	Herbicide applications over the 30-year ITP term within 100 feet of habitat occupied by spiny-sepaled button-celery would be restricted to spot applications developed in coordination with USFWS. USFWS would review proposed herbicide application guidelines to avoid or minimize effects on suitable habitat for spiny-sepaled button-celery. These herbicide treatments would be by licensed applicators using hand-held equipment consistent with label requirements, and primarily for the purpose of noxious weed control.
SSBC-2	Mitigate Unavoidable Impacts	SCE would mitigate for the temporary disturbance and permanent direct and indirect loss of habitat occupied by spiny-sepaled button celery resulting from construction or O&M Covered Activities by providing compensatory habitat through either: (1) preserving in perpetuity compensatory habitat for Covered Species at a USFWS-approved "turnkey" mitigation site; or (2) through another means acceptable to the USFWS.
Source: Data compiled by SCE in 2013		

Table 5-15
Proposed Compensatory Mitigation and Mitigation Strategy Options for Covered Species and Habitats

Species	Impacts (Acres)	Proposed Mitigation (Acres)	Approved Conservation Bank	Permittee- Responsible "Turnkey" Mitigation Site	On-Site Habitat Restoration/Protection
Vernal Pool Fairy Shrimp			Purchase vernal pool habitat credits equivalent to 14.86 acres at an USFWS-approved conservation bank	Dedicate 14.86 acres of vernal pools at an USFWS-approved permittee responsible site	-
Reproduction Habitat		**14.86**			
Permanent Direct Impact	0.15				
Permanent Indirect Impact	4.71				
Temporary Impact	0.25				
Vernal Pool Tadpole Shrimp					
Reproduction Habitat		**14.40**			
Permanent Direct Impact	0.14				
Permanent Indirect Impact	4.58				
Temporary Impact	0.22				
Valley Elderberry Longhorn Beetle			Purchase VELB habitat credits French Camp Conservation Bank	-	-
Elderberry Shrubs		**TBD[1]**			
Permanent Direct Impact	TBD				
Permanent Indirect Impact	TBD				
Temporary Impact	-				
California Tiger Salamander			*See above for vernal pool habitat credits*	*See above for vernal pool habitat mitigation*	-
Reproduction Habitat		**14.40**			
Permanent Direct Impact	0.14				
Permanent Indirect Impact	4.58				
Temporary Impact	0.22				

Table 5-15
Proposed Compensatory Mitigation and Mitigation Strategy Options for Covered Species and Habitats

Species	Impacts (Acres)	Proposed Mitigation (Acres)	Approved Conservation Bank	Permittee- Responsible "Turnkey" Mitigation Site	On-Site Habitat Restoration/Protection
Aestivation and Foraging Habitat		**202.23**	Purchase CTS habitat (aestivation) credits equivalent to 202.23 acres of aestivation habitat at an USWFS-approved conservation bank	Dedicate 202.23 acres of grasslands (CTS aestivation) habitat at an USFWS-approved permittee responsible site	
Permanent Direct Impact - Group 1	30.02				
Permanent Direct Impact - Group 2	10.94				
Permanent Indirect Impact	-				
Temporary Impact	52.40				
Movement Habitat (All Agriculture)					
Permanent Direct Impact - Group 1	11.65				
Permanent Direct Impact - Group 2	0				
Permanent Indirect Impact	-				
Temporary Impact	70.00				
Western Spadefoot Toad			*See above for vernal pool habitat credits*	*See above for vernal pool habitat mitigation*	-
Reproduction Habitat		**11.80**			
Permanent Direct Impact	0.153				
Permanent Indirect Impact	3.69				
Temporary Impact	0.25				
Aestivation and Foraging Habitat (Grassland)		**169.58**	*See above for CTS habitat credits*	*See above for CTS habitat mitigation*	-
Permanent Direct Impact - Group 1	30.02				
Permanent Direct Impact - Group 2	10.94				
Permanent Indirect Impact	-				
Temporary Impact	52.40				

Table 5-15
Proposed Compensatory Mitigation and Mitigation Strategy Options for Covered Species and Habitats

Species	Impacts (Acres)	Proposed Mitigation (Acres)	Approved Conservation Bank	Permittee- Responsible "Turnkey" Mitigation Site	On-Site Habitat Restoration/Protection
Little Willow Flycatcher			-	-	On-site restoration in accordance with the Riparian Habitat Enhancement Plan (Appendix F)
Reproduction/Foraging Habitat (Riparian Habitat)		**0.00[2]**			
Permanent Direct Impact	-				
Permanent Indirect Impact	-				
Temporary Impact	-				
Southwestern Willow Flycatcher					
Reproduction/Foraging Habitat (Riparian Habitat)		**0.00[2]**			
Permanent Direct Impact	-				
Permanent Indirect Impact	-				
Temporary Impact	-				
Least Bell's Vireo					
Reproduction/Foraging Habitat (Riparian Habitat)		**0.00[2]**			
Permanent Direct Impact	-				
Permanent Indirect Impact	-				
Temporary Impact	-				
Burrowing Owl			*See below for SJKF habitat credits*	*See below for SJKF habitat mitigation*	-
Reproduction/Foraging Habitat (Annual Grassland)		**175.54**			
Permanent Direct Impact - Group 1	30.02				
Permanent Direct Impact - Group 2	10.94				
Permanent Indirect Impact	-				
Temporary Impact	52.40				

Table 5-15
Proposed Compensatory Mitigation and Mitigation Strategy Options for Covered Species and Habitats

Species	Impacts (Acres)	Proposed Mitigation (Acres)	Approved Conservation Bank	Permittee- Responsible "Turnkey" Mitigation Site	On-Site Habitat Restoration/Protection
Foraging Habitat (Agriculture - Row Crops)					
Permanent Direct Impact - Group 1	2.33				
Permanent Direct Impact - Group 2	-				
Permanent Indirect Impact	-				
Temporary Impact	12.10				
San Joaquin Kit Fox			*See above for CTS habitat (aestivation) credits.* Purchase additional credits equivalent to 1.17 acres of SJKF habitat at an USWFS-approved conservation bank	*See above for CTS habitat (aestivation) mitigation.* Dedicate an additional 1.17 acres of grasslands habitat at an USFWS-approved permittee responsible site	-
Reproduction Habitat (Annual Grassland)		**203.40**			
Permanent Direct Impact - Group 1	30.02				
Permanent Direct Impact - Group 2	10.94				
Permanent Indirect Impact	-				
Temporary Impact	52.40				
Foraging /Movement Habitat (Agriculture)					
Permanent Direct Impact - Group 1	11.65				
Permanent Direct Impact - Group 2	0				
Permanent Indirect Impact	-				
Temporary Impact	70.00				
Hoover's Spurge			*See above for vernal pool habitat and CTS (aestivation) habitat credits*	*See above for vernal pool habitat and CTS (aestivation) habitat mitigation*	-
Vernal Pools/Swales		**11.34**			
Permanent Direct Impact	0.14				
Permanent Indirect Impact	3.56				
Temporary Impact	0.22				

Table 5-15
Proposed Compensatory Mitigation and Mitigation Strategy Options for Covered Species and Habitats

Species	Impacts (Acres)	Proposed Mitigation (Acres)	Approved Conservation Bank	Permittee- Responsible "Turnkey" Mitigation Site	On-Site Habitat Restoration/Protection
Annual Grassland Associated with Vernal Pools		**33.40**			
Permanent Direct Impact	7.69				
Permanent Indirect Impact	-				
Temporary Impact	9.39				
San Joaquin Valley Orcutt Grass			*See above for vernal pool habitat and CTS (aestivation) habitat credits*	*See above for vernal pool habitat mitigation and CTS (aestivation) habitat*	-
Vernal Pools/Swales		**11.34**			
Permanent Direct Impact	0.14				
Permanent Indirect Impact	3.56				
Temporary Impact	0.22				
Annual Grassland Associated with Vernal Pools		**33.40**			
Permanent Direct Impact	7.69				
Permanent Indirect Impact	-				
Temporary Impact	9.39				
Spiny-Sepaled Button Celery			*See above for vernal pool habitat and CTS (aestivation) habitat credits*	*See above for vernal pool and CTS (aestivation) habitat*	*Protect occupied areas on-site*
Occupied Habitat		**18.31**			
Permanent Direct Impact - Group 1	1.2				
Permanent Indirect Impact	4.58				
Temporary Impact	0.88				

Notes: USFWS = U.S. Fish and Wildlife Service; VELB = valley elderberry longhorn beetle; CTS = California tiger salamander; SJKF = San Joaquin kit fox; TBD = To be determined.

During preconstruction surveys, elderberry shrubs would be surveyed. Where Covered Activities would occur within 100 feet of a shrub, stem surveys of these shrubs would be conducted per the USFWS guidelines for this species (USFWS, 1999). In accordance with these guidelines, mitigation for valley elderberry longhorn beetle would be determined (see also AMM VELB-2).

– Although Covered Activities would not result in the removal of any riparian habitat, temporary Covered Activities have the potential to cause harassment of nesting birds.

Source: Data compiled by AECOM in 2013

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6 MONITORING, ADAPTIVE MANAGEMENT, AND REPORTING

6.1 MONITORING PLAN

Federal regulations require that a habitat conservation plan (HCP) include monitoring of conservation measures and the response of Covered Species to these measures (50 C.F.R. 13.45, 17.22, and 17.32; and 65 Fed. Reg. 35253–35255, June 1, 2000). The monitoring plan outlined in this chapter is designed to meet the following five objectives:

- Evaluate progress toward the biological goals described in Chapter 5, Conservation Strategy.
- Document actual effects associated with construction and operations and maintenance (O&M) Covered Activities.
- Document implementation and compliance with construction and O&M avoidance and mitigation measures (AMMs).
- Document compliance with compensatory mitigation requirements.
- Identify changed circumstances (see Chapter 7, Implementation).

Three types of monitoring are described herein to achieve these objectives:

- Compliance monitoring
- Effects monitoring
- Effectiveness monitoring

As described in this chapter, annual reports would be provided to the U.S. Fish and Wildlife Service (USFWS) throughout the term of the incidental take permit (ITP) to document monitoring results and conservation strategy progress. The monitoring plan and associated annual reporting would provide the information necessary to inform an effective adaptive management strategy (see Section 6.2, Adaptive Management Program) through the term of the ITP.

6.1.1 SCOPE OF MONITORING PLAN

The Five-Point Policy indicates that the scope of monitoring should be commensurate with the scope and duration of the operating conservation program and project effects (65 Fed. Reg. 35241–35257, June 1, 2000). Construction and O&M Covered Activities would be limited to within an approximate 3,385-acre HCP Planning Area (see Section 1.5, Habitat Conservation Plan Planning Area), of which up to 191.45 total acres would be disturbed by Covered Activities during the term of the ITP (Table 4-1).[1]

The geographic scope of the monitoring program would include the area within which Covered Activities would occur (i.e., the HCP Planning Area). As described in Chapter 5, Conservation Strategy, unavoidable permanent and temporary effects would be mitigated by purchasing mitigation credits at USFWS-approved conservation banks, preserving habitat in perpetuity through a USFWS-approved "turnkey" mitigation site, and/or though other USFWS-approved mechanisms. Mitigation lands acquired at a "turnkey" mitigation site would meet the

[1] The total amount of area subject to disturbance would be approximately 90 acres; some areas would be disturbed multiple times during the 30-year term of the ITP.

obligations of the HCP and would be subject to the monitoring program. Effectiveness monitoring of mitigation purchased through USFWS-approved mitigation banks would not be required; see Section 6.1.2.3, Effectiveness Monitoring. Thus, the geographic scope of the monitoring program would consist of the HCP Planning Area and any "turnkey" mitigation site lands acquired for mitigation purposes in accordance with this HCP, as appropriate.

6.1.2 TYPES OF MONITORING

This section describes the three types of monitoring that would be implemented during the permit term of this HCP. Under the Five-Point Policy, the monitoring program of an HCP should provide information to (1) evaluate compliance, (2) determine whether biological goals are being met, and (3) provide feedback information for an adaptive management strategy. The following three monitoring types are described in this section to address the objectives of monitoring provided by the Five-Point Policy:

- **Compliance monitoring** would track plan implementation to verify that SCE is carrying out the terms of the HCP and the ITP.

- **Effects monitoring** would evaluate the actual effects of construction and O&M Covered Activities on suitable habitat for Covered Species, on designated critical habitat for Hoover's spurge and San Joaquin Valley Orcutt grass, and on individuals of each Covered Species to verify that effects do not exceed estimates provided in Chapter 4, Impact Assessment and Level of Take.

- **Effectiveness monitoring** would evaluate whether the operating conservation program of the HCP is consistent with the assumptions and predictions made when the HCP was developed and approved (65 Fed. Reg. 35241–35257, June 1, 2000); whether the biological goals are being met; and whether the conservation strategy is being properly implemented.

Each monitoring type is designed to gather information to address specific questions related to tracking implementation of the HCP, including progress toward biological goals. SCE would be responsible for ensuring that monitoring data are collected, compiled, and reported annually to USFWS. Monitoring data would be entered and archived into the Field Reporting Environmental Database (known as FRED), an electronic database that would be accessible by USFWS. To streamline reporting requirements for the monitoring plan, a single annual report summarizing the three monitoring efforts outlined here would be prepared and submitted to USFWS (see Section 6.4.1, Annual Reports).

6.1.2.1 COMPLIANCE MONITORING

Compliance monitoring for construction and O&M Covered Activities would include the following:

- **Implementation of AMMs**: During implementation of Covered Activities, SCE would track implementation of construction and O&M AMMs for subsequent evaluation. Such evaluations would include the overall number of Covered Activities for which AMMs were required and implemented; the specific reasons that AMMs were or were not being implemented; and the number and location of Covered Activities where Covered Species were identified on or near a worksite, and where AMMs specific to those species were consequently implemented.

- **Implementation of compensatory mitigation actions:** SCE would monitor compensatory mitigation actions (e.g., purchasing credits from a USFWS-approved conservation bank and/or preservation of compensatory habitat at a USFWS-approved "turnkey" mitigation site) by documenting the amount and locations of habitat preserved to mitigate effects of the Cross Valley Line. SCE would ensure that compensation would stay ahead of effects (i.e., SCE would secure compensatory mitigation before initiating a construction or O&M activity that might result in permanent take).

6.1.2.2 EFFECTS MONITORING

Effects monitoring would quantify, in acres, the permanent and temporary effects on Covered Species and their habitats resulting from construction and Class 2 O&M Covered Activities.[2] Environmentally Sensitive Areas potentially supporting Covered Species and their habitats would be mapped to verify or update baseline conditions before the start of construction and Class 2 O&M Covered Activities (see AMMs C-3 and O&M-3 in Tables 2-2 and 2-4, respectively). Permanent and temporary effects on Covered Species habitat (including suitable and occupied habitat) would be calculated using the results of mapping of Environmentally Sensitive Areas and final engineering plans.

Information about Covered Species that are observed in the HCP Planning Area during implementation of construction and Class 2 O&M Covered Activities would be recorded. This would include information about any incidental take (e.g., harm, harassment, injury, or mortality) of Covered Species.

Effects of construction and Class 2 O&M Covered Activities on critical habitat designated for Hoover's spurge and San Joaquin Valley Orcutt grass would also be tracked during effects monitoring. Similar to the calculation of permanent and temporary effects on Covered Species' habitat, effects on designated critical habitat would be calculated using final engineering plans.

6.1.2.3 EFFECTIVENESS MONITORING

As described in Chapter 5, Conservation Strategy, permanent and temporary effects of the Cross Valley Line would be mitigated through compensatory mitigation (i.e., by purchasing mitigation credits at USFWS-approved conservation banks, by preserving in perpetuity compensatory habitat at a USFWS-approved "turnkey" mitigation site, or though other USFWS-approved mechanisms). In addition, on-site revegetation would be conducted where construction and Class 2 O&M Covered Activities would temporarily affect land cover, specifically annual grassland, and AMMs would be implemented to avoid and minimize effects on Covered Species. Effectiveness monitoring would be conducted by SCE (or authorized land managers) to ensure that the conservation strategy, restoration actions, and AMMs described in this HCP would be implemented successfully. As described below, SCE's effectiveness monitoring obligations would vary depending on the purpose of monitoring; however, SCE would be required to ensure the availability of funding to facilitate effectiveness monitoring.

The following subsections provide general frameworks for effectiveness monitoring. More detailed monitoring guidelines would be provided by the forthcoming site-specific monitoring plans for the proposed "turnkey" mitigation site and the O&M Environmental Compliance Plan (AMM O&M-1).

[2] Class 1 O&M Covered Activities would not involve disturbing soil or vegetation outside of facility footprints. See Chapter 2, Covered Activities, for a description of Class 1 and Class 2 O&M Covered Activities.

Effectiveness Monitoring of Compensatory Mitigation Lands

Effectiveness monitoring of compensatory mitigation lands would be conducted to ensure that suitable habitat for Covered Species would be present and maintained in perpetuity on mitigation sites. This effectiveness monitoring would be carried out by the designated owners and managers of the mitigation lands, to whom SCE would contract such responsibility.

Depending on the mechanism used for compensatory mitigation, assurances may already exist to ensure that conserved lands would meet specific long-term management and monitoring obligations for the Cross Valley Line's compensatory mitigation. For example, USFWS-approved mitigation banks have assurances in place ensuring that natural resource values are protected, monitored, and managed in perpetuity. In situations where assurances for protection, monitoring, and management of compensatory mitigation lands are already in place and approved by USFWS, SCE would be responsible only for purchasing the appropriate amount of mitigation credits[3] from the mitigation bank owner. The mitigation bank owner would be responsible for implementing long-term management and monitoring obligations and reporting to USFWS.

For compensatory mitigation lands where assurances are not in place (i.e., proposed "turnkey" mitigation sites), SCE would coordinate with designated land managers and USFWS to ensure that the following criteria would be met:

- The potential mitigation site can be managed and maintained consistently with HCP compensatory mitigation requirements and the conservation strategy.
- Suitable habitat for Covered Species is present, as determined by a qualitative field assessment of habitat suitability.
- Covered Species are present, as determined using documentation of species occurrences (e.g., results from presence/absence surveys, species occurrence data from regional databases such as the California Natural Diversity Database [CNDDB]); and/or the site supports suitable habitat for Covered Species and is located within the extant range of the Covered Species.

USFWS approval would be required for all compensatory mitigation. Effectiveness monitoring would commence within 1 year after acquisition and entitlement of a "turnkey" mitigation site. Acquisition would entail SCE contracting with the respective landowner and long-term land manager to secure the site as mitigation for the Cross Valley Line. Entitlement would entail the following actions:

- The site land manager (under contract by SCE) would complete a site-specific long-term management and monitoring plan. The long-term management and monitoring plan would describe resource monitoring, reporting (including reports to USFWS), and adaptive management for the site.
- SCE would fund an endowment to provide for the long-term management of the site. The amount of the endowment would be calculated through a funding analysis that would be based on details in the long-term management plan.

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[3] A mitigation credit is a unit of measure representing the quantification of species or habitat conservation values within a conservation bank.

- The site land manager (under contract by SCE) would record a perpetual conservation easement to protect the site.

The long-term management and monitoring plan and conservation easement would be reviewed and approved by USFWS within 18 months after the issuance of the ITP. To this end, SCE would coordinate with designated land manager(s) and USFWS to develop site-specific monitoring plan(s) to initiate and guide effectiveness monitoring efforts. The objectives of the monitoring plan(s) would be as follows:

- Document and quantify habitat attributes at the level of land cover type.
- Evaluate and quantify habitat suitability for Covered Species.
- Evaluate and quantify the introduction and proliferation of invasive, nonnative species.
- Evaluate and quantify effects of implemented management strategies.

As appropriate, the designated land manager would be responsible for implementing effectiveness monitoring; SCE would be responsible for ensuring the availability of funding for effectiveness monitoring. The designated land manager would use data from effectiveness monitoring to inform land management decisions and adaptive management strategies. Where "turnkey" mitigation sites are located adjacent to existing preserves, and monitoring and management of the preserve is under way, the objectives of site-specific monitoring plans would be consistent with those developed for the preserve, to the extent practicable. Where appropriate, monitoring and management of the "turnkey" mitigation site would be integrated into the overall management strategy for the preserve.

Effectiveness Monitoring of Revegetation Treatments

Construction and Class 2 O&M Covered Activities would result in small, often discontinuous, disturbed areas. These areas would be revegetated as described in Section 2.2.2.6, Revegetation of New Access Roads; Section 2.2.4.5, Revegetation of Crane Pads; and AMMs O&M-10 and O&M-12. SCE would conduct effectiveness monitoring of revegetation sites for up to 3 years after treatment. An approach to monitoring these treatments with measurable success criteria would be included in the O&M Environmental Compliance Plan (AMM O&M-1). This monitoring would support SCE's adaptive management of the approach to revegetation after O&M treatments.

Effectiveness Monitoring of Avoidance and Minimization Measures

SCE would monitor the effectiveness of AMMs using information collected during compliance monitoring of construction and O&M Covered Activities (see 6.1.2.1, "Compliance Monitoring"). SCE would review compliance monitoring results of AMMs annually to determine the modifications to AMMs, if any, necessary to avoid and minimize effects on Covered Species and their habitats. Should effectiveness monitoring of AMMs determine a need to make minor modifications to existing measures or develop additional measures, SCE would coordinate with USFWS.

AMM O&M-1 prescribes the preparation and implementation of an O&M environmental compliance plan. As described in Table 2-2, this plan would (1) be prepared after completion of construction Covered Activities, (2) include Environmentally Sensitive Area maps (as described in AMM O&M-3), and (3) identify species habitats and necessary buffers (per species-specific conservation strategies and AMMs). Implementing this plan would ensure that O&M Covered Activities would avoid and minimize take of Covered Species. Upon preparation of this plan, SCE would provide it to USFWS for review.

6.1.2.4 Monitoring by the U.S. Fish and Wildlife Service

USFWS may conduct inspections and monitoring in connection with the ITP, in accordance with its regulations (see 50 C.F.R. 13.47).

6.2 ADAPTIVE MANAGEMENT PROGRAM

Adaptive management can be defined as an integrated method for addressing uncertainty in natural resource management (Holling, 1978; Walters, 1986; Gunderson, 1999). The Five-Point Policy indicates that adaptive management programs should be considered where data or information gaps exist regarding the ecology of Covered Species or the effects associated with implementation of the HCP (65 Fed. Reg. 35241–35257, June 1, 2000).

Uncertainties associated with the HCP consist of actual effects on Covered Species and their habitats resulting from Covered Activities, the current locations of sensitive habitats and occupied habitats for Covered Species within the HCP Planning Area, and effectiveness of AMMs. The level of uncertainty associated with these aspects of the HCP is low, given the preconstruction studies that have been conducted and SCE's previous experience and success implementing AMMs similar to those described in this HCP. The adaptive management program described in this section is designed to address uncertainties associated with this HCP using strategies recommended by USFWS's Five Point Policy. Through the adaptive management program, HCP implementation would be reviewed and adjusted on the basis of monitoring data (see Section 6.1, Monitoring Plan) and other new information made available throughout the ITP term.

6.2.1 Implementation

SCE would be responsible for implementing, reporting, and funding the adaptive management program described in this HCP. The adaptive management program, which would address uncertainties related to Covered Species, the Environmentally Sensitive Areas, and AMMs, would be implemented during the entire permit term of the HCP.

"Turnkey" mitigation sites would be managed using adaptive management principles (see "Effectiveness Monitoring of Compensatory Mitigation Lands" above). SCE would contract with land managers of the proposed "turnkey" mitigation site(s) to assume the stewardship responsibilities associated with mitigation sites, including adaptive management of these lands. The designated land managers, enabled through a contract with SCE, would coordinate with USFWS on the development and approval of a long-term management and monitoring plan for the "turnkey" mitigation site, to ensure that SCE would obtain properties that are satisfactory to both USFWS and the California Department of Fish and Wildlife. This plan would address adaptive management on mitigation sites. The long-term management and monitoring plan would be reviewed and approved by USFWS within 18 months after the issuance of the ITP. Thus, adaptive management of a "turnkey" mitigation site is not included in the design of the adaptive management program associated with this HCP.

6.2.2 ADAPTIVE MANAGEMENT PROGRAM DESIGN

The adaptive management program of this HCP is designed to address the following key uncertainties:

- Covered Species take (see Chapter 4, Impact Assessment and Level of Take)
- Location within the HCP Planning Area of Environmentally Sensitive Areas (i.e., suitable habitat of Covered Species plus species-specific buffers/avoidance areas around these habitats, based on the respective conservation strategies for the Covered Species)
- Effectiveness of AMMs (see Section 5.2)

The purpose and methods for assessing these uncertainties are provided in the following subsections.

6.2.2.1 REVISE ESTIMATES OF TAKE

The estimates of temporary and permanent effects on Covered Species and their habitats reported in Chapter 4, Impact Assessment and Level of Take, are based on the current understanding of the distribution of suitable, in some cases occupied, habitat for most species (and, for spiny-sepaled button celery, only occupied habitat) in the HCP Planning Area and extent of Covered Activities. SCE would document actual effects on Covered Species through effects monitoring (see Section 6.1.2.2, Effects Monitoring). Based on these documented effects, estimates of temporary and permanent effects on Covered Species resulting from Covered Activities would be reviewed annually and quantified based on field verification and as-built versions of final engineering plans. SCE would adjust mitigation requirements as necessary based on adjusted estimates of take. Adjustment of permanent or temporary effects that would result in increases in the level of incidental take permitted by the HCP would require an amendment to the HCP (see Section 7.6.2, Amendments). SCE would not implement adaptive management changes that might result in less mitigation than provided for Covered Species under the original terms of the HCP, unless USFWS first provides written approval.

6.2.2.2 UPDATE MAPPING OF ENVIRONMENTALLY SENSITIVE AREAS

Maps of Environmentally Sensitive Areas for the HCP Planning Area (AMMs C-3/O&M-3) support the implementation of multiple AMMs. The locations of some Environmentally Sensitive Areas would change during HCP implementation (e.g., elderberry shrubs, burrow complexes for California tiger salamander, burrows for burrowing owls, dens for San Joaquin kit fox, spiny-sepaled button celery occupied habitat). Therefore, maps of these areas would be updated annually to maintain accurate maps of sensitive habitats and habitat occupied by Covered Species. Data from effects monitoring and other information sources would be used to update the extent of Environmentally Sensitive Areas within the HCP Planning Area. Updates to mapping of Environmentally Sensitive Areas that would require modifying existing or establishing new AMMs would require minor modifications to the HCP (see Section 7.6.1, Minor Modifications).

6.2.2.3 ADJUST IMPLEMENTATION OF AVOIDANCE AND MINIMIZATION MEASURES

SCE would implement AMMs for the duration of the HCP. As described above under “Effectiveness Monitoring of Avoidance and Minimization Measures,” the effectiveness of AMMs would be monitored; this monitoring of AMM implementation would allow for an evaluation of the need to change or improve AMMs during the permit term of the HCP. Implementation of AMMs would be reviewed annually to evaluate when and where AMMs were being implemented, and their effectiveness. SCE would evaluate the circumstances under which AMMs were not being consistently implemented and would coordinate with USFWS to adjust AMMs as necessary as a result of certain shortcomings (e.g., conflicting ITP requirements, physical location of covered activity, or safety concerns). Adjusting implementation of AMMs would ensure that AMMs would continue both to be implementable and to minimize effects on Covered Species. Implementation of AMMs would continue unless data were to clearly demonstrate that removing an AMM would not increase take of Covered Species or their habitats; removal of an AMM may occur only after coordination with and approval from USFWS. Data collected during compliance monitoring would be used to review implementation of AMMs.

The effectiveness of AMMs at reducing effects on Covered Species and their habitats would be evaluated based on a review of monitoring data, in particular the observations of biological monitors, and effectiveness monitoring of revegetation treatments. Based on this review, "lessons learned" and alternative strategies would be identified in coordination with USFWS for AMMs that could further reduce effects, and applied to implementation of AMMs. Modifying existing or establishing new AMMs may require either revisions to the HCP (see Section 7.6.1, Minor Modifications) or written concurrence from USFWS.

6.3 EMERGENCY MANAGEMENT

O&M Covered Activities may be conducted under emergency conditions; these could include major repairs to tubular steel poles, lattice steel tower structures, conductors, and optical ground wires. SCE would have full and immediate access to a problem area to conduct any repair actions necessary to protect human life or property. SCE would maintain a USFWS-approved biologist on call to support implementation of AMMs to the maximum extent practicable during emergency situations. SCE would work with USFWS after stabilization of the emergency situation to identify appropriate actions (e.g., impact analysis, habitat restoration, HCP amendment) and schedule to characterize and redress any adverse effects on Covered Species and their habitats.

Emergency situations (e.g., wildfire, floods, or other catastrophic events) may also arise on compensatory mitigation lands. In these types of emergency situations, local emergency response personnel are legally required to have full and immediate access to these areas to undertake appropriate measures necessary to protect human life or property. To the maximum extent practicable, SCE or, by contract, the designated land manager of the mitigation site would notify and coordinate with personnel designated by USFWS to identify appropriate emergency response activities to avoid or reduce adverse effects of the activities on Covered Species and their habitats on compensatory mitigation lands. Where time would not permit such coordination, SCE would immediately notify USFWS upon stabilization of the emergency situation regarding actions that may have adversely affected Covered Species or their habitats.

6.4 REPORTING

6.4.1 ANNUAL REPORTS

An annual report would be prepared and submitted to USFWS throughout the term of the ITP. This annual report would document implementation of Covered Activities, effects, conservation actions, management actions, habitat revegetation actions, results of monitoring efforts (i.e., compliance monitoring, effects monitoring, and effectiveness monitoring), any proposed adaptive management actions, and any emergency O&M actions taken. To allow time for data synthesis, copies of the annual monitoring report would be submitted by February 15 after the year (January through December) to which the report would apply. Copies of the report would be submitted to

USFWS, Assistant Field Supervisor for Endangered Species, Sacramento Field Office, 2800 Cottage Way, Room W-2605, Sacramento, CA 95825.

Copies of the original field notes, raw data, and photographs would be included in the report. The annual report would include, at a minimum, the following information:

- Summary of the status of biological goals and objectives of the HCP
- Description of Covered Activities, including number and location, and associated AMMs implemented during the reporting period
- Summary of the number of activities for which each AMM was applied
- Assessment of the effectiveness of AMM implementation, including the effectiveness of AMMs at reducing effects on Covered Species and their habitats, and a discussion and explanation of any AMMs that may need to be modified; should any changes be proposed to improve implementation of AMMs, these would be detailed in both the report and the cover letter to the report
- Assessment of the effectiveness of revegetation treatments
- Summary of Covered Species observations (including a map showing locations of observations and completed forms submitted to the CNDDB)
- Year-to-date and cumulative summary (i.e., from the start of the ITP term) of effects on Covered Species habitat, presented in acres, and any documented incidental take of Covered Species (e.g., harassment, injury, killing)
- Year-to-date and cumulative summary of total effects on designated critical habitat for Hoover's spurge and San Joaquin Valley Orcutt grass, including acreage of effects on primary constituent elements
- Year-to-date and cumulative summary of compensatory mitigation actions
- Summary (to be provided every fifth year) of monitoring plan objectives and results for compensatory mitigation sites owned (i.e., title held) by SCE, as provided by designated land managers; information on the monitoring results and the effectiveness of monitoring at "turnkey" mitigation sites would be provided based on the reporting schedule described in the site's long-term management and monitoring plan (see Section 6.1.2.3, Effectiveness Monitoring)
- Description of the adaptive management process used and actions, as proposed in the previous year's annual report, that were taken during the reporting period
- List of third-party contractors subject to the provisions of the HCP and a description of how SCE has ensured the contractors' compliance with the terms of the HCP (e.g., worker environmental awareness training)

SCE may propose any such adaptive management changes by notice to USFWS, specifying the adaptive management modifications proposed; the basis for these modifications, including supporting data; and the anticipated effects on Covered Species, along with other environmental impacts. Within 120 days of receiving such a notice, USFWS would either approve the proposed adaptive management changes, modify the changes and then approve them as modified, or notify SCE that the proposed changes constitute ITP amendment(s) that must be reviewed (see Section 7.6.2, Amendments).

Data for annual reports would be extracted from SCE's electronic database that is used for standardized data entry. This database allows monitors to use offline or online forms to record monitoring data. This database includes built-in quality assurance/quality control measures to ensure that data is recorded and input into the system accurately. For example, information in forms completed offline would be uploaded and processed through an approval process.

6.4.2 OTHER REPORTS

SCE would provide any additional information in its possession or control related to HCP implementation that USFWS may request for assessing whether the ITP and HCP terms and conditions, including the HCP's adaptive management plan, were being fully implemented. SCE would provide this information within 30 days of USFWS's request.

SCE would be responsible for implementing a mitigation monitoring, reporting, and compliance program (MMRCP) to ensure the effective implementation of the mitigation measures adopted for the Cross Valley Line by the California Public Utilities Commission (CPUC 2010). Where appropriate, SCE would use monitoring data collected for the MMRCP to address overlapping monitoring objectives outlined in this HCP (e.g., monitoring implementation of AMMs).

6.4.3 CERTIFICATION OF REPORTS

All reports would include the following certification from a responsible company official who supervised or directed preparation of the report:

> "I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate, and complete."

7 IMPLEMENTATION

7.1 INTRODUCTION

This chapter describes implementation of the habitat conservation plan (HCP) for the Southern California Edison (SCE) Cross Valley Transmission Line (Cross Valley Line). The chapter addresses changed and unforeseen circumstances; funding; plan modifications and amendments; and permit suspension/revocation, renewal, and transfer. Implementation of the HCP would begin when the Section 10(a)(1)(B) incidental take permit (ITP) is issued, and before the initiation of construction and operations and maintenance (O&M) Covered Activities. The HCP would remain in effect for 30 years. Construction Covered Activities are anticipated to require 1 year or less; O&M Covered Activities would extend throughout the 30-year permit term.

7.2 HABITAT CONSERVATION PLAN IMPLEMENTATION RESPONSIBILITIES

Day-to-day implementation of the HCP during the 30-year permit term would be managed by SCE (the Permittee). SCE would solicit and receive advice from the U.S. Fish and Wildlife Service (USFWS) regarding HCP implementation as necessary. USFWS would maintain review and approval authority over certain components of the HCP (e.g., acquisition of mitigation land and changes to monitoring and adaptive management. except as provided in this HCP). Chapter 6, Monitoring, Adaptive Management, and Reporting, describes the detailed implementation responsibilities of SCE for monitoring and adaptive management. SCE would implement the adaptive management provisions in Section 6.2, Adaptive Management Program, when necessary to achieve the HCP's biological objectives or to respond to monitoring results or new scientific information.

7.3 CHANGED CIRCUMSTANCES

Section 10 permit regulations found at 50 C.F.R. 17.32(b)(1) through 17.32(b)(8) and 50 C.F.R. 17.22(b)(1) through 17.22(b)(8) require that an HCP specify the procedures to be used for dealing with changed circumstances that might arise during the implementation of the HCP. The Habitat Conservation Plan Assurances Rule ("No Surprises Rule") (Title 63, pages 8859–8873 of the *Federal Register* [63 Fed. Reg. 8859–8873], February 23, 1998; 69 Fed. Reg. 71723–71731, December 10, 2004; 50 C.F.R. 17.3) defines changed circumstances and describes the obligations of permittees and USFWS to address such changed circumstances. Changed circumstances are defined as changes in circumstances affecting a species or geographic area covered by an HCP that can reasonably be anticipated and planned for by HCP developers and USFWS (50 C.F.R. 17.3).

SCE would give notice to USFWS within 7 days after learning that any of the changed circumstances discussed in Section 7.3 had occurred. As soon as practicable thereafter, but no later than 30 days after learning of the changed circumstances, the Permittee would modify its activities in the manner described in the HCP Adaptive Management Plan (Section 6.2, Adaptive Management Program, of the HCP) to the extent necessary to avoid, minimize, or mitigate the effects of the changed circumstances on Covered Species, and would report to the USFWS on its actions. The Permittee would make such adaptive management modifications without awaiting notice from USFWS.

Should USFWS determine that changed circumstances have occurred and that the Permittee has not responded in accordance with Sections 7.3 and 6.2 of the HCP, USFWS would notify the Permittee and would direct the Permittee to make the required changes. Within 30 days after receiving such notice, the Permittee would make the required changes and report to USFWS on its actions. Such changes are provided for in the HCP, and hence do not constitute unforeseen circumstances or require amendment of the ITP or HCP.

Although the occurrence of a potential changed circumstance is unlikely, the following potential changed circumstances are recognized by this HCP:

- New species listings in HCP Planning Area (Sections 7.3.1, 7.3.2, and 7.3.3)
- Unexpected discovery of the occurrence of a listed species in the HCP Planning Area (Section 7.3.4)
- New critical habitat designations in the HCP Planning Area (Section 7.3.5)
- Wildfire (Section 7.3.6)
- Drought (Section 7.3.7)
- Floods (Section 7.3.8)
- Invasion by nonnative species (Section 7.3.9)
- Vandalism (Section 7.3.10)
- Climate change (Section 7.3.11)

Each potential changed circumstance recognized by this HCP is discussed in the following subsections.

7.3.1 New Listing of Nonlisted Covered Species in the Habitat Conservation Plan Planning Area

If an unlisted Covered Species (i.e., a species covered by this HCP that is not listed as threatened or endangered under the Endangered Species Act [ESA]) is listed under the ESA after the ITP is issued, no action is required by SCE (see Table 1-1 for the listing status of Covered Species). This HCP includes measures to conserve all 13 Covered Species, whether or not they are currently listed. Accordingly, should any nonlisted Covered Species become listed during the 30-year permit term, additional conservation measures would not be required. The HCP's ITP would become effective to authorize incidental take of that species concurrent with their listing under the ESA. At that time, USFWS would amend its biological opinion to reflect this change in species status. All Covered Species (listed and unlisted) named in the ITP and addressed in this HCP would be covered by the terms of the ITP.

7.3.2 New Listing of Uncovered Species in the Habitat Conservation Plan Planning Area

SCE would be notified by USFWS if a species that is not covered by the HCP, but that may occur within the HCP Planning Area and be affected by Covered Activities, were to become a candidate for listing or be listed under the ESA during the 30-year permit term. SCE, with assistance from USFWS, would evaluate the potential effects of Covered Activities on the newly listed species, and SCE would avoid actions that may cause take or jeopardy to the existence of the species in the implementation of its Covered Activities until the HCP ITP is amended to include such species. SCE may enter into negotiations with USFWS regarding necessary modifications to the HCP, if any, to revise or amend the ITP to cover the newly listed species. Should SCE decide to pursue coverage of the species under this HCP, USFWS would provide technical assistance in identifying appropriate modifications to the HCP that would be necessary to revise or modify the ITP to cover the newly listed species, as described below in Section 7.6, Modifications to the Habitat Conservation Plan.

7.3.3 DELISTING OF COVERED SPECIES

Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants; it results from successful recovery efforts. Should a Covered Species become delisted, SCE would coordinate with USFWS to determine whether the HCP should be amended and/or whether avoidance, minimization, or mitigation measures specific to the delisted species can be discontinued. SCE understands that if a Covered Species were to be delisted after the ITP is issued, avoidance, minimization, or mitigation measures specific to the delisted species could be modified only if they were not considered as part of USFWS's delisting justification.

7.3.4 NON-COVERED LISTED SPECIES OCCURRENCE IN THE HABITAT CONSERVATION PLAN PLANNING AREA

7.3.4.1 GENERAL

SCE would notify USFWS of an occurrence of a non-covered listed species within the HCP Planning Area during the implementation of this HCP. Similarly, USFWS would notify SCE should information become available indicating the presence within the HCP Planning Area of a non-covered listed species. SCE, with assistance from USFWS, would evaluate the potential effects of Covered Activities on the non-covered listed species, and SCE would avoid actions that may cause take or jeopardy to the existence of the species in the implementation of its Covered Activities.

7.3.4.2 CALIFORNIA CONDOR (*GYMNOGYPS CALIFORNIANUS*)

Historical occurrence of California condors (condors) within Tulare County occurred in the foothills and lower elevations of the Sierra Nevada and condors did not typically utilize the flat agricultural areas of the San Joaquin Valley. However, there are three known occurrences (three radio collared individuals) of condors in the vicinity of the HCP, all during May 2011. The three individuals were recorded in the vicinity of the proposed Cross Valley Line at 1.4 miles, 14 miles, 14.3 miles (two individuals), and 22 miles. While these individuals were likely transient, there is some potential over the 30-year permit term that condor use of the area may increase. Currently, both the general construction of the proposed Cross Valley Line (i.e., height of the towers, spacing of the lines, etc.) and specific avoidance measures (i.e., installation of bird deflectors on 3.25 miles of the line, etc.) should be sufficient to avoid take of condors. If condor use within the vicinity of the proposed Cross Valley Line increases over the 30-year permit term, SCE, in conjunction with USFWS, will evaluate what, if any, additional avoidance measures are necessary to avoid take of condors; these may include, but not limited to, installation of additional bird deflectors (i.e., along additional sections of the line) or installation of a different type of bird deflector. Both general and species specific avoidance measures evolve over time (i.e., new more effective measures are developed), as such, any future appropriate measures will be reviewed by SCE in conjunction with the USFWS. Alternatively, if condor use in the vicinity increases and the likely hood of take of condors increases, SCE can propose an amendment to their 10(a)(1)(B) permit to include condors as a covered species or will comply with ESA via other means (such as through section 7).

7.3.5 NEW CRITICAL HABITAT DESIGNATIONS IN THE HABITAT CONSERVATION PLAN PLANNING AREA

SCE would be notified by USFWS if new critical habitat were to be designated within the HCP Planning Area. With assistance from USFWS, SCE would evaluate the potential effects of Covered Activities on the newly designated critical habitat, and SCE would avoid actions that may cause adverse modification of critical habitat in the implementation of its Covered Activities. Should the critical habitat designation be associated with a species covered by the HCP, SCE and USFWS would work cooperatively to determine whether modifications to the HCP are required, as described below in Section 7.6, Modifications to the Habitat Conservation Plan. SCE would implement the modifications to the HCP, if any, to avoid adverse modifications to the newly designated critical habitat.

If the new critical habitat designation were to be associated with an uncovered species, SCE may enter into negotiations with USFWS regarding necessary modifications to the HCP, if any, to revise or amend the ITP to cover the relevant listed species, as described below in Section 7.6, Modifications to the Habitat Conservation Plan. Should SCE decide to pursue coverage of the listed species under this HCP, USFWS would provide technical assistance in identifying appropriate modifications to the HCP that would be necessary to revise or modify the ITP to cover the critical habitat.

7.3.6 WILDFIRE

Wildfires are natural events in the region and fire can be reasonably anticipated to occur within the 30-year permit term. Most of the landscape within the HCP Planning Area has been converted to developed uses and irrigated agricultural production, with the exception of some riparian land cover associated with the St. John's River and Cottonwood Creek, the Friant-Kern Canal, and a few small, isolated patches of annual grassland. East of the Friant-Kern Canal, the predominant land cover is actively grazed annual grassland, which contains vernal pools and swales in flatter areas, rock outcrops, and patches of oak woodland in steeper areas (see Chapter 3, Environmental Setting/Biological Resources).

The natural land cover types within the HCP Planning Area consist of fire-adapted vegetation communities (e.g., resilient to fire or relying on fire to promote natural successional changes in habitat composition). However, depending on the size, intensity, and frequency of wildfires, these natural events may cause significant damage to habitats in the HCP Planning Area. For example, more frequent, intense wildfires may cause type conversion of land cover types, increasing the extent of certain land cover types at the expense of others. These changed circumstances may result in degradation or loss of Covered Species habitat in the HCP Planning Area. SCE would follow the reporting procedure outlined in Section 7.3, Changed Circumstances, to notify USFWS if wildfire were to result in a changed circumstance and loss of Covered Species habitat within the HCP Planning Area and, if used as a component of compensatory mitigation, at a "turnkey" mitigation site.

It is anticipated that the effects of wildfire and associated effects on mitigation sites would be managed according to general long-term management principles, as implemented by Land Trust Alliance (LTA)-accredited land managers. These land managers would detect significant trends associated with wildfire effects over the 30-year permit term, and during the preservation and management of the preserve lands in perpetuity. Over the 30-year permit term, the mitigation preserve's LTA-accredited land-management entity would provide preserve monitoring information and analysis to SCE for inclusion in SCE's annual report to USFWS. SCE would be responsible for notifying USFWS if the biological effectiveness of the HCP Conservation Strategy (including habitat at any mitigation preserves) were to become inconsistent, for any reason (severity, frequency, or size of wildfire), with the assumptions and predictions made when the HCP was developed and permitted.

An unforeseen circumstance may arise if (a) the area devastated by wildfire or wildfire severity or frequency were to exceed what could normally be expected in the land cover types of the HCP Planning Area and mitigation lands, as may occur as a result of climate change; and (b) the condition of the Covered Species' habitats were to become inconsistent with the assumptions and predictions made when the HCP was developed and permitted.

7.3.7 DROUGHT

The HCP Planning Area supports natural riparian woodland and annual grassland land cover types that have adapted to and are tolerant to drought. The Covered Species that inhabit those land cover types are also drought-adapted species. SCE would coordinate with USFWS should effectiveness monitoring (see Section 6.1.2.3, Effectiveness Monitoring) determine that that avoidance and minimization measures (AMMs) or revegetation treatments are not effectively minimizing effects on Covered Species, including effects associated with drought. For purposes of defining changed circumstances, drought is defined as at least 3 years in length, as declared by the California Department of Water Resources.

Should SCE or the LTA-accredited land management entity determine that a prolonged drought is known or suspected to have damaged Covered Species' habitat within the HCP Planning Area, SCE would give notice to USFWS within 7 days. As soon as practicable thereafter, but no later than 30 days after learning of the changed circumstances, the Permittee would modify its activities in the manner described in the HCP Adaptive Management Plan (Section 6.2 of the HCP) to the extent necessary to avoid, minimize, or mitigate the effects of the changed circumstances on Covered Species, and would report to USFWS on its actions. The Permittee would make such adaptive management modifications without awaiting notice from USFWS.

Should USFWS determine that changed circumstances have occurred and that the Permittee has not responded in accordance with Sections 7.3 and 6.2 of the HCP, USFWS would notify the Permittee and would direct the Permittee to make the required changes. Within 30 days after receiving such notice, the Permittee would make the required changes and report to USFWS on its actions. Such changes are provided for in the HCP and hence do not constitute unforeseen circumstances or require amendment of the ITP or HCP.

It is anticipated that the effects of prolonged droughts on mitigation lands would be managed according to general long-term management principles, as implemented by LTA-accredited land managers. LTA-accredited land managers would detect significant trends associated with the effects of drought over the 30-year permit term, and during the preservation and management of the preserve lands in perpetuity. Over the 30-year permit term, the mitigation preserve's LTA-accredited land-management entity would provide preserve monitoring information and analysis to SCE for inclusion in SCE's annual report to USFWS. SCE would be responsible for notifying USFWS should the biological effectiveness of the HCP Conservation Strategy (including habitat at any mitigation preserves) become inconsistent for any reason (including severity, frequency, or prolonged period of drought) with the assumptions and predictions made when the HCP was developed and permitted.

An unforeseen circumstance may arise if (a) the severity, frequency, or prolonged period of drought were to exceed normal cyclical patterns, as may occur as a result of climate change; and (b) the condition of the Covered

Species’ habitats were to become inconsistent with the assumptions and predictions made when the HCP was developed and permitted.

7.3.8 FLOODING

Floods are natural occurrences in the southern San Joaquin Valley. The annual grasslands and the riparian woodland land cover types, and the Covered Species that inhabit them, have adapted with occasional seasonal flooding. Winter storms in the region may result in localized flooding events, which can accelerate erosion and affect habitat suitability. Other potential effects of flood events can include relocation or lowering of river channels and extensive deposition of sediment on floodplains. These effects, in turn, can result in changes to the water table, and thus to potential vegetation types and to infrastructure providing drainage, water supply, and access. The potential exists for flooding to occur within the HCP Planning Area because of the location of existing floodplains (see Figure 3-3, 12-Digit HUC Subwatersheds of the HCP Planning Area Cross Valley Line).

Should SCE or the LTA-accredited land management entity determine that a flood event is known or suspected to have damaged Covered Species’ habitat within the HCP Planning Area, SCE would give notice to USFWS within 7 days. As soon as practicable thereafter, but no later than 30 days after learning of the changed circumstances, the Permittee would modify its activities in the manner described in the HCP Adaptive Management Plan (Section 6.2 of the HCP) to the extent necessary to avoid, minimize, or mitigate the effects of the changed circumstances on Covered Species, and would report to the USFWS on its actions. The Permittee would make such adaptive management modifications without awaiting notice from USFWS.

Should USFWS determine that changed circumstances have occurred and that the Permittee has not responded in accordance with Sections 7.3 and 6.2 of the HCP, USFWS would notify the Permittee and would direct the Permittee to make the required changes. Within 30 days after receiving such notice, the Permittee would make the required changes and report to USFWS on its actions. Such changes are provided for in the HCP, and hence do not constitute unforeseen circumstances or require amendment of the ITP or HCP.

It is anticipated that the effects of flooding and associated effects on mitigation sites would be managed according to adaptive management strategies described in Section 6.2, and as implemented by LTA-accredited land managers. LTA-accredited land managers would detect significant trends associated with flooding effects over the 30-year permit term, and during the preservation and management of the preserve lands in perpetuity. Over the 30-year permit term, the mitigation preserve’s LTA-accredited land-management entity would provide preserve monitoring information and analysis to SCE for inclusion in SCE’s annual report to USFWS. SCE is responsible for notifying USFWS should the biological effectiveness of the HCP Conservation Strategy (including habitat at any mitigation preserves) become inconsistent for any reason (including severity, frequency, or size of area devastated by flooding) with the assumptions and predictions made when the HCP was developed and permitted.

An unforeseen circumstance may arise if (a) the amount of area devastated by flooding or the severity or frequency of flooding were to exceed what could normally be expected in the land cover types of the planning area and mitigation lands, as may occur as a result of climate change; and (b) the condition of the Covered Species habitats were to become inconsistent with the assumptions and predictions made when the HCP was developed and permitted.

7.3.9 INVASION BY NONNATIVE SPECIES

The introduction and proliferation of nonnative species is a concern for management of any habitat. These species can outcompete native species for limited resources, resulting in loss of species diversity. SCE would coordinate with USFWS should effectiveness monitoring (see Section 6.1.2.3, Effectiveness Monitoring) determine that AMMs or revegetation treatments are not effectively minimizing effects on Covered Species, including effects associated with invasion by nonnative species.

Should SCE or the LTA-accredited land management entity determine that an invasion of nonnative species is known or suspected to have damaged Covered Species' habitat within the HCP Planning Area, SCE would give notice to USFWS within 7 days. As soon as practicable thereafter, but no later than 30 days after learning of the changed circumstances, the Permittee would modify its activities in the manner described in the HCP Adaptive Management Plan (Section 6.2 of the HCP) to the extent necessary to avoid, minimize, or mitigate the effects of the changed circumstances on Covered Species, and would report to USFWS on its actions. The Permittee would make such adaptive management modifications without awaiting notice from USFWS.

Should USFWS determine that changed circumstances have occurred and that the Permittee has not responded in accordance with Sections 7.3 and 6.2 of the HCP, USFWS would notify the Permittee and would direct the Permittee to make the required changes. Within 30 days after receiving such notice, the Permittee would make the required changes and report to USFWS on its actions. Such changes are provided for in the HCP and hence do not constitute unforeseen circumstances or require amendment of the ITP or HCP.

It is anticipated that effects associated with the introduction and proliferation of nonnative species on mitigation lands would be managed according to adaptive management principles described in Section 6.2, Adaptive Management Program, as implemented by LTA-accredited land managers. LTA-accredited land managers would detect significant trends associated with effects on Covered Species and their habitats resulting from nonnative species invasion over the 30-year permit term, and during the preservation and management of the preserve lands in perpetuity. Over the 30-year permit term, the mitigation preserve's LTA-accredited land-management entity would provide preserve monitoring information and analysis to SCE for inclusion in SCE's annual report to USFWS. SCE would be responsible for notifying USFWS should the biological effectiveness of the HCP Conservation Strategy (including habitat at any mitigation preserves), become inconsistent for any reason (including severity, frequency, or size of area affected by nonnative species invasion) with the assumptions and predictions made when the HCP was developed and permitted.

An unforeseen circumstance may arise if (a) the amount of area devastated by, or the severity or frequency of nonnative species invasion were to exceed what could normally be expected in the land cover types of the HCP Planning Area and mitigation lands, as may occur as a result of climate change; and (b) the condition of the Covered Species' habitats were to become inconsistent with the assumptions and predictions made when the HCP was developed and permitted.

7.3.10 VANDALISM

Vandalism, such as destruction of preserve fences or illegal dumping, could negatively affect Covered Species in the HCP Planning Area. Should SCE or the LTA-accredited land management entity determine that vandalism is known or suspected to have damaged Covered Species' habitat within the HCP Planning Area, SCE would give notice to USFWS within 7 days. As soon as practicable thereafter, but no later than 30 days after learning of the changed circumstances, the Permittee would address the vandalism and, if needed, modify its activities in the manner described in the HCP Adaptive Management Plan (Section 6.2 of the HCP) to the extent necessary to avoid, minimize, or mitigate the effects of the changed circumstances on Covered Species, and would report to USFWS on its actions. The Permittee would make such adaptive management modifications without awaiting notice from USFWS.

Should USFWS determine that changed circumstances have occurred and that the Permittee has not responded in accordance with Sections 7.3 and 6.2 of the HCP, USFWS would notify the Permittee and would direct the Permittee to make the required changes. Within 30 days after receiving such notice, the Permittee would make the required changes and report to USFWS on its actions. Such changes are provided for in the HCP, and hence do not constitute unforeseen circumstances or require amendment of the ITP or HCP.

It is anticipated that effects of vandalism on mitigation lands would be managed according to general long-term management principles, as implemented by LTA-accredited land managers. These land managers would be responsible for notifying USFWS should long-term management strategies fail to address effects on Covered Species and their habitats resulting from vandalism.

7.3.11 Climate Change Effects

Climate change is occurring as a result of increasing concentrations of greenhouse gases (e.g., carbon dioxide) in the Earth’s atmosphere (National Research Council, 2010; IPCC, 2007) and is having significant impacts on natural resources (National Fish, Wildlife, and Plants Adaptation Partnership, 2012). Temperature and precipitation modeling based on greenhouse gas emission projections suggest that the region’s climate will shift to be warmer and dryer (Luers et al., 2006; Hayhoe et al., 2004). A warmer, dryer climate in the region may result in such changes as shifts in species’ ranges, shifts in the timing of seasonal events (e.g., migrations, blooming periods, breeding), and increases in the frequency and intensity of disturbance events (e.g., floods, droughts, wildfire). These changes may affect the survival of Covered Species in the HCP Planning Area.

SCE would monitor the effectiveness of AMMs and revegetation treatments (see Section 6.1.2.3, Effectiveness Monitoring), and it is expected that this monitoring would detect significant trends associated with climate change that may affect the success of AMMs and revegetation efforts. SCE would adjust implementation of AMMs and revegetation treatments as appropriate should SCE determine that AMMs or revegetation treatments are not effectively minimizing effects on Covered Species, as specified in Section 6.2.2, Adaptive Management Program Design.

It is further anticipated that monitoring and adaptive management strategies implemented on mitigation sites by designated LTA-accredited land managers would detect significant trends associated with climate change effects over the 30-year permit term, and during the preservation and management of the preserve lands in perpetuity. Long-term management of these mitigation sites is expected to address apparent trends that may affect the survival of Covered Species. However, it is unlikely that compensatory mitigation sites would be of sufficient size to provide adequate buffers for all effects associated with climate change (e.g., species’ range shifts). Therefore, where appropriate, acquisition of mitigation lands would be based in part on connectivity with other, larger preserves, to increase the resilience of natural habitat preserved in the region to the effects of climate change. Over the 30-year permit term, the mitigation preserve’s LTA-accredited land-management entity would provide preserve monitoring information and analysis to SCE for inclusion in SCE's annual report to USFWS. SCE would be responsible for notifying USFWS should the biological effectiveness of the HCP Conservation Strategy (including habitat at any mitigation preserves) become inconsistent, for any reason, with the assumptions and predictions made when the HCP was developed and permitted.

The changed circumstance caused by climate change can be expected to result in shifts in the distribution of Covered Species within the HCP Planning Area and mitigation lands because of changes in the locations and abundance of suitable habitat, changes in the relative abundance and productivity of Covered Species, and changes in the relative effects of competing species. Sections 7.3.1 through 7.3.9 address these foreseeable climate change-related changed circumstances.

7.4 UNFORESEEN CIRCUMSTANCES AND "NO SURPRISES" RULE

Unforeseen circumstances are defined by the No Surprises Rule as changes in circumstances affecting a species or geographic area covered by an HCP that could not reasonably have been anticipated by HCP developers and USFWS at the time of the HCP's negotiation and development, and that would result in a substantial and adverse change in status of the Covered Species (50 C.F.R. 17.3). For the purposes of this HCP, changes in circumstances not described in Section 7.3, Changed Circumstances, that would result in a substantial and adverse change in the status of a Covered Species are considered unforeseen circumstances. The No Surprises Rule provides assurances to non-Federal landowners participating in habitat conservation planning under the ESA that no additional land restrictions or financial compensation would be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of permittees.

Upon issuance of the ITP, SCE shall receive regulatory assurances pursuant to the "No Surprises" regulations at 50 C.F.R. 17.22(b)(5) and 17.32(b)(5). Pursuant to the "No Surprises" regulations, as long as this HCP and the ITP are being properly implemented, USFWS shall not require additional conservation and mitigation measures that involve the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of this HCP, without the consent of SCE.

USFWS will have the burden of demonstrating that unforeseen circumstances exist, using best available scientific and commercial data, including consideration of the factors set forth in 50 C.F.R. 17.22(b)(5) and 17.32(b)(5) (e.g., size of the current range of the affected species, percent of range adversely affected by the conservation plan, percent of range conserved by conservation plan, ecological significance of that portion of the range affected by the conservation plan, level of knowledge about the affected species and the degree of specificity of the species' conservation program under the conservation plan, and whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild), and data provided for in the annual reporting documents submitted by the Permittee. USFWS will notify SCE in writing if it determines that an unforeseen circumstance has arisen. If USFWS were to determine that an unforeseen circumstance may exist and affect the outcome of the HCP, SCE would work cooperatively with USFWS to identify potential additional measures to address such circumstances, and during the period necessary to determine the nature and location of potential additional or modified mitigation, SCE would ensure that Covered Activities do not contribute to appreciably reducing the likelihood of the survival and recovery of the affected species.

This HCP expressly incorporates by reference the permit assurances set forth in the No Surprises Rule adopted by USFWS and published in the *Federal Register* on February 23, 1998 (50 C.F.R. 17). If additional conservation and mitigation measures are deemed necessary to respond to unforeseen circumstances, USFWS may require additional measures of SCE where the conservation plan is being properly implemented, but only if such measures are limited to modifications within conserved habitat areas, if any, or to the conservation plan's operating conservation program for the affected species, and maintain the original terms of the conservation plan to the maximum extent possible. Additional conservation and mitigation measures to address unforeseen circumstances would not involve the commitment of additional land, water, or compensatory mitigation; financial compensation; or restrictions on Covered Activities without the consent of SCE. Resolution of the situation would be documented by letters between USFWS and SCE.

7.5 PLAN FUNDING

SCE would be responsible for funding full implementation of this HCP. Costs associated with implementation of the HCP are as follows:

- Administration and training
- Acquisition of compensatory mitigation sites in perpetuity
- Implementation of AMMs
- Implementation of monitoring and adaptive management on mitigation sites
- Implementation of remedial actions for changed circumstances

SCE would fund implementation of the HCP using the operating budgets of relevant departments. SCE has adequate resources to fulfill all commitments as described in the HCP. Funds to implement the HCP are paid by SCE customers. Collection of these funds is authorized by the California Public Utilities Commission and the Federal Energy Regulatory Commission for the ongoing operation, maintenance, and construction of utility facilities. SCE would promptly notify USFWS of any material change in the Permittee's financial ability to fulfill its obligations and commitments. In addition to providing any such notice, SCE would provide USFWS with a copy of its annual report for each year of the ITP, or with other reasonably available financial information that would provide adequate evidence of SCE's ability to fulfill its obligations.

7.6 MODIFICATIONS TO THE HABITAT CONSERVATION PLAN

The HCP and the ITP may be modified in accordance with existing regulations. Modifications to the HCP may be requested by SCE or USFWS. Two categories of changes are described herein: minor modifications and amendments. Amendments to the HCP or ITP would be processed in accordance with all applicable legal requirements—namely, the ESA, the National Environmental Policy Act (NEPA), and other applicable regulations. The following subsections define each category of change and the process to be followed in implementing such changes.

7.6.1 MINOR MODIFICATIONS

Minor modifications are changes to the HCP that do not require amendments to the ITP. Such changes are provided for under the conservation strategy (e.g., adaptive management changes, as described in Section 6.2, Adaptive Management Program, and responses to changed circumstances, as described in Section 7.3). Minor modifications may not modify the scope or nature of activities or actions covered by the ITP; result in operations under the HCP that are significantly different from those contemplated or analyzed in connection with the HCP as approved; result in adverse effects on the environment that are new or significantly different from those analyzed in connection with the HCP as approved; or result in additional take not analyzed in connection with the HCP as approved.

Minor modifications to the HCP may include, but are not limited to, those listed below.

- Corrections of typographic, grammatical, and similar editing errors that do not change the intended meaning
- Corrections or revisions of any maps or exhibits to correct errors in mapping or to reflect previously approved changes to the ITP or HCP
- Minor changes to survey, monitoring, or reporting protocols
- Modifying existing or establishing new AMMs, after approval from the USFWS
- Modifying reporting protocols for annual reports
- Any other modifications to the HCP that are minor in nature and meet the criteria listed below:
  - Would not result in operations under the HCP that are significantly different from those analyzed in connection with the HCP as approved
  - Would not result in effects on the environment or take effects that are new or significantly different from those analyzed in connection with the HCP as approved
  - Would allow for the approval or execution of agreements to facilitate execution and implementation of the HCP
  - Would allow the permit applicant to delegate any of its duties specified by the HCP to a third party under its direct control

Minor modifications may be proposed by USFWS or SCE. The party proposing a minor modification to the HCP will circulate the proposed minor modification to all other parties. Such notice shall include a statement of the reason for the proposed modification and an analysis of its environmental effects, including its effects on operations under the HCP and on Covered Species. The parties will respond in writing to a proposed minor modification within 60 days of receipt of such notice. USFWS responses will (1) concur with the proposed minor modification; or (2) disapprove the minor modification. If USFWS disapproves the minor modification, it will include in its written response an explanation of its determination. USFWS may identify additional information necessary to enable USFWS to approve or disapprove the minor modification within the 60 calendar day period. USFWS will not propose or approve minor modifications to the HCP if the USFWS determines that such modifications would result in (1) operations under the HCP that are significantly different from those analyzed in connection with the original HCP, (2) adverse effects on the environment that are new or significantly different from those analyzed in connection with the original HCP, or (3) additional take not analyzed in connection with the original HCP. If SCE and USFWS agree to the proposed minor modification, SCE will process the minor modification to the HCP. If, for any reason, a receiving party objects to a proposed modification, it must be processed as an amendment of the ITP.

7.6.2 AMENDMENTS

Amendments are changes to the HCP that require amendments to the ITP. Amendments may include but are not limited to any of the following types of changes to the HCP.

- Changes to the HCP Planning Area boundary
- Increases in the level of incidental take permitted by the HCP
- Changes to funding except as otherwise provided for in the HCP to account for all adjustments for inflation, adaptive management, and changed circumstances
- Addition of species to the Covered Species list
- Changes to the Covered Activities that were not addressed in the HCP as originally adopted, and that do not otherwise meet the minor modification provisions
- Extension of the term of the ITP past the 30-year permit duration

To amend the ITP, SCE would submit a formal application to USFWS. In proposing the amendment, SCE would provide a statement of the reasons for the amendment and an analysis of its environmental effects, including its effects on operations under the HCP and on Covered Species. Such applications typically require submittal of a revised HCP, a completed permit application form with appropriate fees, and preparation of an environmental review document prepared in accordance with NEPA, as appropriate. However, specific document requirements might vary based on the nature of the amendment. After receipt of a complete application package for a proposed amendment to the ITP, USFWS would publish a notice of the proposed amendment in the *Federal Register* as required by the ESA. USFWS would use its reasonable efforts to process the proposed amendment within 180 calendar days of publication, except where longer periods are required by law. The amendment would be treated as an original permit application. After public comment on the proposed amendment, USFWS may approve or deny the ITP amendment application.

7.7 SUSPENSION/REVOCATION

USFWS may suspend or revoke its respective permits should SCE fail to implement the HCP in accordance with the terms and conditions of the permits, or should suspension or revocation be otherwise required by law. USFWS may suspend or revoke the ITP for cause in accordance with the laws and regulations in force at the time of such suspension or revocation (see Title 5, Part 558 of the U.S. Code [5 U.S.C. 558]; 50 C.F.R. 13.27 through 13.29; 15 C.F.R. 904). The exception is that USFWS may revoke the ITP based on a determination that continuing the permitted activity would be likely to jeopardize the continued existence of the Covered Species only if USFWS has not been successful in remedying the situation in a timely fashion through other means as provided in the No Surprises Rule (50 C.F.R. 17.22[b][5] and 50 C.F.R. 17.32[b][5]).

Such suspension or revocation may apply to the entire ITP, or only to specified Covered Species, covered lands, or Covered Activities. In the event of suspension or revocation, the Permittee's obligations under the HCP would continue until USFWS determines that all take of Covered Species that occurred under the ITP has been fully mitigated in accordance with the HCP.

7.8 PERMIT EXTENSION

Upon expiration and the agreement of the parties, the Section 10(a)(l)(B) permit may be extended beyond its initial term under the regulations of USFWS in force on the date of such extension, provided that biological circumstances and other pertinent factors affecting Covered Species are not significantly different than those described in the original HCP and the extension otherwise complies with all applicable laws. Should SCE desire to extend the ITP, it would notify USFWS at least 180 days before the then-current term is scheduled to expire. Extension of the permit constitutes extension of the HCP for the same amount of time, subject to any HCP revisions that USFWS may require at the time of extension.

To renew the ITP, SCE must submit to USFWS, in writing:

- A request to renew the ITP
- Reference to the original permit number
- Certification that all statements and information provided in the original HCP and permit application, together with any approved HCP amendments, are still true and correct, and inclusion of a list of changes
- A description of any take that has occurred under the existing ITP
- A description of any portions of the project still to be completed, if applicable, or activities under the original ITP that the renewal is intended to cover

If USFWS concurs with the information provided in the request, it may renew the ITP consistent with permit renewal procedures required by Federal regulation (50 C.F.R. 13.22). If SCE files a renewal request and the request is on file with the issuing USFWS office at least 180 days before the ITP's expiration, the ITP would remain valid while the renewal is being processed. However, SCE may not take listed species beyond the quantity authorized by the original ITP. Should SCE fail to file a renewal request within 180 days before permit expiration, the ITP would become invalid upon expiration. SCE and the mitigation preserve's LTA-accredited land-management entity (or mitigation bank operator) must have complied with all annual reporting requirements to qualify for a permit renewal.

7.9 LAND TRANSFER

The Permittee's transfer of ownership or control of covered land would require prior approval by USFWS and an amendment of the ITP in accordance with Section 7.6.2 of this HCP chapter, except that transfers of covered lands may be processed as minor modifications in accordance with Section 7.6.1 of this HCP if any of the following conditions would apply:

(a) The land would be transferred to an agency of the Federal government and, before the transfer, USFWS has determined that transfer would not compromise the effectiveness of the HCP based on adequate commitments by that agency regarding management of such land.

(b) The land would be transferred to a non-Federal entity that has entered into an agreement acceptable to USFWS (e.g., an easement held by the State fish and wildlife agency with USFWS as third-party beneficiaries) to ensure that the lands would be managed in such a manner and for such duration as not to compromise the effectiveness of the HCP.

(c) The land would be transferred to a non-Federal entity that, before completion of the land transaction, has agreed to be bound by the HCP as it applies to the transferred land and has obtained an ITP following normal permit procedures covering all species then covered by the Permittee's permit.

(d) USFWS determines that the amount of land to be transferred would not have a material impact on the ability of SCE to comply with the requirements of the HCP and the terms and conditions of the ITP.

7.10 DISPUTE RESOLUTION

It is recognized that disputes concerning implementation of, compliance with, or termination of the HCP and the ITP may arise from time to time. SCE and USFWS will work together in good faith to resolve such disputes, using the informal dispute resolution procedures set forth in this section or such other procedures upon which the parties may later agree. However, if at any time any party determines that circumstances so warrant, it may seek any available remedy without waiting to complete informal dispute resolution.

Unless the parties agree upon another informal dispute resolution process, the parties may use the following process to attempt to resolve disputes:

(a) The aggrieved party will notify the other parties of the provision that may have been violated, the basis for contending that a violation has occurred, and the remedies it proposes to correct the alleged violation.

(b) The party alleged to be in violation will have 30 days, or such other time as may be agreed, to respond. During this time, it may seek clarification of the information provided in the initial notice. The aggrieved party will use its best efforts to provide any information then available to it that may be responsive to such inquiries.

(c) Within 30 days after such response was provided or was due, representatives of the parties will meet and negotiate in good faith toward a solution satisfactory to all parties, or will establish a specific process and timetable to seek such a solution.

(d) If any issues cannot be resolved through such negotiations, the parties will consider nonbinding mediation and other alternative dispute resolution processes and, if a dispute resolution process is agreed upon, will make good faith efforts to resolve all remaining issues through that process.

Notices shall be in writing and may be delivered by facsimile or other electronic means provided that they are also delivered personally or by certified mail. Notices shall be transmitted to USFWS (Assistant Field Supervisor for Endangered Species, Sacramento Field Office, 2800 Cottage Way, Room W-2605, Sacramento, CA 95825) and Southern California Edison, 2244 Walnut Grove, Rosemead, CA 91770, Attn: Nichole Yeto.

8 ALTERNATIVES TO TAKE

Habitat conservation plans (HCPs) are required to describe the alternative actions to take that were considered and the reasons why those alternatives were not selected. Alternatives to take encompass both actions that would reduce take below levels that would result from implementation of the HCP and those that would avoid take altogether (USFWS and NMFS, 1998). Several alternatives were analyzed in Chapter 3, Alternatives and Cumulative Projects, of the Environmental Impact Report (EIR) for the Cross Valley Loop Transmission Line Project (Cross Valley Line) (CPUC, 2009, 2010) (Table 8-1). These alternatives can be grouped as follows: a no action alternative, alternatives to a new transmission line, and alternative transmission line alignments (Table 8-1).

These alternatives were evaluated for how well they met the following project objectives (CPUC, 2009, 2010):

- Provide safe and reliable electric service consistent with North American Electric Reliability Corporation/Western Electricity Coordinating Council and California Independent System Operator Corporation reliability criteria
- Provide safe and reliable electric service consistent with Southern California Edison's (SCE's) electrical system planning guidelines
- Increase transmission capacity between Big Creek Hydroelectric Project and Rector Substation to mitigate overload conditions
- Reduce the need to interrupt customer electrical service under transmission line outage conditions
- Minimize the need to reduce Big Creek Hydroelectric Project generation under transmission line outage conditions
- Minimize electrical service interruptions to customers by scheduling the construction of new facilities in an orderly and rational manner
- Meet project need while minimizing environmental impact
- Meet project need and construction schedule in a cost-effective manner

As noted in Table 8-1, some alternatives were not selected by the California Public Utilities Commission (CPUC); therefore, SCE is not authorized to build them. This section describes and analyzes take for each Covered Species for each of these three groupings of alternatives.

Table 8-1
Summary of Alternatives Evaluated in the Cross Valley Loop Transmission Line Environmental Impact Report

Alternative	Description	Meets Project Objectives
No Action Alternative	New transmission lines and associated infrastructure would not be built to reduce overloads on transmission infrastructure.	No
Alternatives to a New Transmission Line		
Replacement Alternative	Existing tower lines would be removed and reconstructed with one double-circuit line for Magunden-Rector, Big Creek 1-Rector, and Big Creek 2-Rector lines.	No
Reconductoring Alternative	The conductor would be replaced with an increased-capacity conductor on existing poles for Magunden-Rector, Big Creek 1-Rector, and Big Creek 3-Rector.	No
System Alternative 1	A new 220 kV transmission line (Magunden-Rector-BC3) would be constructed along the existing 130-mile ROW, but the ROW would be widened. Double-circuit poles for future upgrades would be built.	No
System Alternative 2	Springville-Magunden Line would be looped into Vestal Substation. Vestal-Rector Line would be upgraded by installing a new line, reconstructing, or reconductoring.	No
Demand Management Conservation Alternative	The need for a transmission line loop would be replaced through implementation of an energy conservation program.	No
New Generation Alternative	A renewable or conventional/ distributed generation program would be implemented. Local sources of electricity that would not require the upgrade of the transmission line or substations would be provided.	No
Alternative Transmission Line Alignments		
Alignment Alternative 1	This alternative follows the alignment several miles south of Cross Valley Line. Total length is 4.5 miles shorter than that of Cross Valley Line. The alignment would affect the communities of Farmersville and Lemon Cove.	Yes
Alignment Alternative 2 (Cross Valley Line)	See Chapter 2 of this HCP.	Yes
Alignment Alternative 3	This alignment uses 14.6 miles of existing ROW. Total length is 1.3 miles longer than that of Cross Valley Line. The alignment would require construction of more roads to access difficult terrain.	Yes
Alignment Alternative 4	This alignment requires all new ROW. Construction would be similar to that of Cross Valley Line.	No
Alignment Alternative 5	This alternative shifts a portion of the alignment 1–2 miles north of Alignment Alternative 1. It would pass through agricultural areas similar to those crossed by Alignment Alternative 1. It would use slightly more existing ROW.	No
Alignment Alternative 6	This alternative follows the alignment several miles north of Alignment Alternative 1. It uses approximately 8.1 miles of existing ROW.	Yes

Notes: HCP = habitat conservation plan; kV = kilovolt; ROW = right-of-way

Source: Compiled by AECOM in 2013, based on CPUC 2009 and 2010

8.1 NO ACTION ALTERNATIVE

The No Action Alternative assumes that the proposed issuance of an incidental take permit would not occur and that the Cross Valley Line would not be built to reduce overloads on transmission infrastructure. Under the No Action Alternative, no Covered Activities (i.e., new construction of roads and tubular steel pole and lattice steel pole pads) would occur. Implementing the No Action Alternative would have resulted in reduced impacts on Covered Species because habitat would not have been affected or lost, and individuals of the Covered Species would not have been harmed, displaced, or killed because of construction and operation and maintenance (O&M) of Covered Activities of the Cross Valley Line. The No Action Alternative would not have met project objectives because a substantial reduction in demand in the SCE service area would have been necessary, and such a reduction is infeasible in the foreseeable future through an energy conservation program or similar action. Because it would have prevented SCE from meeting its mandate to provide safe and reliable electric service to SCE customers, the No Action Alternative was not selected.

8.2 ALTERNATIVES TO A NEW TRANSMISSION LINE

If a new transmission line is not constructed, there would be no take of Covered Species resulting from construction and O&M activities. However, to meet the demand for safe and reliable power and reduce the likelihood of system overloads, other projects would need to take place, which may result in negative effects on the environment, including take of Covered Species. SCE considered three types of alternatives to a new transmission line that would reduce the likelihood of system overloads:

(1) Modify Existing Facilities

This type of alternative consists of a replacement alternative, a reconductoring alternative, and two system alternatives described in the Cross Valley Loop Transmission Line EIR (CPUC, 2009) (Table 8-1). These alternatives, which rely primarily on modifying existing facilities, would have been neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, these alternatives were not selected because they would have prevented SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

(2) Implement Demand Management Conservation

The demand management conservation alternative involves implementing an energy conservation program (Table 8-1). This alternative, which is based on demand management, would not have met project objectives because a substantial reduction in demand in the SCE service area would have been necessary to meet project objectives, and such a reduction is infeasible in the foreseeable future through an energy conservation program or similar action. Therefore, similar to the No Action Alternative, this alternative was not selected because it would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

(3) Construct New Renewable or Conventional Energy Sources

This alternative, which would consist of constructing new renewable or conventional energy sources (Table 8-1), would have had unknown impacts that would be discovered and analyzed during the permit application and environmental review process. Most alternatives involving new energy sources would result in environmental impacts comparable to, or potentially greater than, those of the Cross Valley Line, including take of Covered Species. Additionally, the construction of new energy sources would not have replaced the need for upgrading the existing transmission infrastructure in the SCE service area. This alternative would not have met project objectives for either capacity or reliability needs, and transmission infrastructure upgrades would still have been required to integrate any renewable resources; therefore, this alternative was eliminated from further consideration.

8.3 ALTERNATIVE TRANSMISSION LINE ALIGNMENTS

Actions involving alternative transmission line alignments would construct a new transmission line to reduce the likelihood of overloads, but with a different route than the Cross Valley Line. The preferred alternative (Alignment Alternative 1), which was initially proposed by SCE and evaluated in the EIR, is an alternative alignment to the Cross Valley Line and would have avoided sensitive habitats, but it would have caused significant unmitigable impacts on farmland in Lemon Cove and Farmersville; thus, it was not selected during the California Environmental Quality Act process. The EIR compared five alternatives to Alignment Alternative 1. Of those, only three met the regulatory, legal, and technical feasibility criteria of project objectives and reduced the environmental impacts of Alignment Alternative 1: Alignment Alternative 2 (i.e., which included the Cross Valley Line), Alignment Alternative 3, and Alignment Alternative 6 (CPUC, 2009) (Table 8-1).

- **Alignment Alternative 2** was chosen as the Environmentally Superior Alternative and is described in this HCP as the Cross Valley Line, consisting of the Covered Activities occurring within the HCP Planning Area. Alignment Alternative 2 (i.e., the Cross Valley Line) will not be discussed further as an alternative transmission line alignment in this chapter because it is the proposed action for this HCP.

- **Alignment Alternative 3** would have met project objectives but would have placed the new transmission line through the Stone Corral Ecological Reserve as well as through jurisdictional waters of the United States and waters of the State (i.e., drainages and seasonal wetlands). Alignment Alternative 3 would have caused significant impacts on claypan vernal pool habitat, resulting in a more significant level of take than Alignment Alternative 1; thus, it was not selected as the Environmentally Superior Alternative in the EIR.

- **Alignment Alternative 4** was eliminated from further consideration because it would not have met the reliability criteria of the project objectives.

- **Alignment Alternative 5** was eliminated from further consideration in the EIR because impacts on sensitive habitats would have been greater than those under Alignment Alternative 1.

- **Alignment Alternative 6** was not selected as the Environmentally Superior Alternative because the alignment would have resulted in impacts on additional sensitive biological resources (i.e., designated critical habitat for San Joaquin Valley Orcutt grass *[Orcuttia inaequalis]*). Although potential impacts would be mitigated to less than significant, impacts on sensitive habitats would have been greater than under Alignment Alternative 1, and the impacts on farmland would have been greater than under both Alignment Alternative 1 and the Cross Valley Line.

For each Covered Species, this chapter describes the take minimization measures incorporated into the Covered Activities, and the alternative actions considered during the environmental review process documented in the EIR that would have avoided take or resulted in less take than under this HCP. Some of the wildlife Covered Species are not listed under the Endangered Species Act (ESA). However, SCE has chosen to cover these species in this HCP, and, in this chapter, they will be discussed as if they were listed. In addition, although take of listed plants is not prohibited by the ESA, the effects of the Cross Valley Line on listed plants and their critical habitat are taken into consideration as part of the Section 7 analysis and as part of the Section 10 permit issuance criteria. Therefore, to facilitate the analysis for Section 7, and the authorization of the Section 10 permit, a discussion of how negative impacts of plant Covered Species could be avoided under the alternatives presented in Table 8-1 will be included in this chapter.

8.4 VERNAL POOL FAIRY SHRIMP

Covered Activities would result in take of vernal pool fairy shrimp by grading that converts habitat to non-habitat and alters the hydrology of adjacent vernal pools/swales providing habitat, and temporary disturbance of vegetation and soils in work areas. Each of these mechanisms would also result in harm and mortality of shrimp. During development of the Cross Valley Line, the design of facilities was modified to reduce effects on habitat of vernal pool fairy shrimp, and the Cross Valley Line would directly affect only approximately 1 percent of vernal pools/swales, puddles, and stock ponds/basins that provide suitable habitat for vernal pool fairy shrimp in the HCP Planning Area. Minimization of take has been incorporated into the Class 2 O&M Covered Activities, and additional species- and habitat-specific measures to further reduce take would also be implemented as part of this HCP (see Tables 2-2, 2-4, and measures VP-1 and VP-2 in Table 5-14).

No Action Alternative

Implementing the No Action Alternative would have avoided take of vernal pool fairy shrimp that would result from the Covered Activities. However, failing to carry out a project to improve the conveyance of power to the SCE service area would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers. Therefore, it was not selected.

Alternatives to a New Transmission Line

Modifying existing facilities would have required less permanent loss and less temporary disturbance of suitable habitat for vernal pool fairy shrimp because most habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be less than required for a new facility. Therefore, it would have resulted in less take of vernal pool fairy shrimp, and may have avoided take altogether. However, alternatives relying primarily on modification of existing facilities would be neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

Demand management through an energy conservation program or similar action would not have resulted in any loss or disturbance of vernal pool fairy shrimp habitat and, thus, would have avoided take. However, alternatives based on demand management would not meet project objectives because a substantial reduction in demand within the SCE service area would be necessary to meet project objectives, and such a reduction is not feasible in the foreseeable future through an energy conservation program or similar action. Therefore, similar to the No

Action Alternative, this alternative was not selected because it would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

Construction of new renewable or conventional energy sources may not have resulted in less take of vernal pool fairy shrimp, depending on its location. However, most alternatives involving new energy sources would not have met project objectives, would require transmission to interconnect to the grid, and could have resulted in environmental impacts comparable to, or potentially greater than, those of either Alignment Alternative 1 or the Cross Valley Line, including take of Covered Species. For these reasons, these alternatives were not selected.

Alternative Transmission Line Alignments

Because take of vernal pool fairy shrimp primarily occurs in vernal pool landscapes, which are restricted in their distribution, the route of a transmission line strongly affects the amount of take. Three alternative transmission line alignments, all of which met project objectives, were considered in the EIR.

Alignment Alternative 1 would have avoided vernal pool landscapes and thus would have resulted in less take of vernal pool fairy shrimp than the Cross Valley Line. However, implementing Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove. It was not selected by the CPUC; therefore, SCE is not authorized to build it.

Alignment Alternative 3 would have resulted in the most significant unmitigable impacts on northern claypan vernal pool habitat and on vernal pool fairy shrimp because it would traverse vernal pool habitat that is protected in the Stone Corral Ecological Reserve. In addition, it would have affected jurisdictional waters of the United States and waters of the State, including drainages and seasonal wetlands. Implementing Alignment Alternative 3 would result in greater impacts on vernal pool fairy shrimp than the Cross Valley Line because of the unmitigable impacts on northern claypan vernal pool habitat.

Alignment Alternative 6, and similarly Alignment Alternatives 4 and 5, would not have reduced take of vernal pool fairy shrimp because the alignment would result in impacts on vernal pool fairy shrimp similar to those under the Cross Valley Line.

8.5 VERNAL POOL TADPOLE SHRIMP

Covered Activities would result in take of vernal pool tadpole shrimp by grading that converts habitat to non-habitat and alters the hydrology of adjacent vernal pools/swales providing habitat, and temporary disturbance of vegetation and soils in work areas. Each of these mechanisms would also result in harm or mortality of shrimp. Although vernal pool tadpole shrimp has a more restricted distribution than vernal pool fairy shrimp, and does not occur in puddles, the minimization measures incorporated into the Covered Activities and the alternatives to take are as described above for vernal pool fairy shrimp. Also as described for vernal pool fairy shrimp, Covered Activities would affect only approximately 1 percent of vernal pools/swales that occur in the HCP Planning Area.

8.6 VALLEY ELDERBERRY LONGHORN BEETLE

Covered Activities would result in take of valley elderberry longhorn beetle by grading and vegetation removal, and temporary disturbance of vegetation and soils in work areas. Through these mechanisms, habitat is permanently lost and/or temporarily disturbed and beetles may be harmed or killed. Minimization of take has been incorporated into the design of the Cross Valley Line facilities and the implementation of Covered Activities (see Tables 2-2, 2-4, and 5-14). For example, transmission structures and new access roads are not sited in riparian land cover, which provide suitable habitat for valley elderberry longhorn beetle, and buffers would be established around elderberry shrubs where practicable (measure VELB-1). Because feasible minimization has been included in the Covered Activities and HCP's conservation strategy, there are not additional feasible alternatives to the design of facilities or the implementation of construction and O&M Class 2 Covered Activities that would avoid or result in less take of valley elderberry longhorn beetle.

No Action Alternative

As described previously for vernal pool fairy shrimp, implementing the No Action Alternative would have avoided take of valley elderberry longhorn beetle but the alternative was not selected because it would not have met project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Alternatives to a New Transmission Line

Modifying existing facilities would have required less permanent loss and less temporary disturbance of suitable habitat for valley elderberry longhorn beetle because most habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be much less than required for a new facility. Therefore, it would have resulted in less take of valley elderberry longhorn beetle, and may have avoided take altogether. However, alternatives relying primarily on modification of existing facilities would be neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

Demand management through an energy conservation program or similar action would reduce take of valley elderberry longhorn beetle because habitat for this species would be conserved. However, because these alternatives would not meet project objectives, they were not selected during the environmental review process.

Because the habitat for valley elderberry longhorn beetle is widely dispersed in riparian corridors and adjacent land cover, construction of new energy sources and related transmission lines could have resulted in comparable or greater amounts of take as compared to the Cross Valley Line, depending on the specific sites involved.

Alternative Transmission Line Alignments

Because the habitat for valley elderberry longhorn beetle is widely dispersed in riparian corridors and adjacent land cover, construction of a transmission line with an alternative alignment could have resulted in comparable or greater amounts of take than the Cross Valley Line, depending on the specific sites involved.

As described earlier, Alignment Alternative 1 would have affected less natural vegetation. Thus, this alignment would have resulted in less take of valley elderberry longhorn beetle than the Cross Valley Line. However, Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove. It was not selected by the CPUC; therefore, SCE is not authorized to build it.

Alignment Alternatives 3, 4, 5, and 6 would have affected a similar amount of natural land cover types, including habitat of the valley elderberry longhorn beetle, as the Cross Valley Line, and would not reduce the likelihood of take of valley elderberry longhorn beetle.

8.7 CALIFORNIA TIGER SALAMANDER

Covered Activities would result in take of California tiger salamander from salamanders being crushed or trapped in burrows or otherwise harmed and harassed, including permanent loss or temporary disturbance of habitat, during construction and O&M Covered Activities. Also, constructed drainage systems and stormwater diversion structures could indirectly result in harassment, harm, or mortality of migrating salamanders by impeding their migration from upland to aquatic habitats (see Section 4.3.1.4, California Tiger Salamander). Minimization of take has been incorporated into the design of Cross Valley Line facilities and the implementation of Covered Activities (see Tables 2-2, 2-4, and 5-14). As a result of this minimization, the Cross Valley Line would directly affect only approximately 1 percent of aquatic breeding habitat and 8 percent of annual grassland upland habitat for California tiger salamanders in the HCP Planning Area. Because feasible minimization has been included in the Covered Activities and HCP's conservation strategy, there are not additional feasible alternatives to the design of facilities or the implementation of construction and O&M Class 2 Covered Activities that would avoid or result in less take of California tiger salamander.

No Action Alternative

As described previously for vernal pool fairy shrimp, implementing the No Action Alternative would avoid take of California tiger salamanders, but the alternative was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Alternatives to a New Transmission Line

As was described previously for vernal pool fairy shrimp, modifying existing facilities would have required less permanent loss and less temporary disturbance of suitable habitat for California tiger salamander because most habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be much less than required for a new facility. Therefore, it would have resulted in less take of Covered Species that depend on these habitats However, alternatives relying primarily on modification of existing facilities would be neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would have prevented SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

As described previously for other Covered Species, implementing the demand management alternative would avoid take of California tiger salamanders and destruction or disturbance of their habitat, but the alternative was not selected because it would not have met project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Construction of new renewable or conventional energy sources may not have resulted in less take of California tiger salamanders and their habitat, depending on its location. However, most alternatives involving new energy sources would not have met project objectives, would require transmission lines to interconnect to the grid, and could have resulted in environmental impacts comparable to, or potentially greater than, those of Alignment

Alternative 1 and the Cross Valley Line, including take of Covered Species. For these reasons, these alternatives were not selected.

Alternative Transmission Line Alignments

Because salamanders can travel extensive distances between breeding and upland habitats, through both natural and agricultural land cover types, a large-scale linear project, such as a transmission line, is unlikely to avoid take in landscapes that contain suitable habitat and are in the species range. However, alignments crossing vernal pool landscapes, which provide suitable breeding habitat for California tiger salamanders, would generally result in greater levels of take.

Alignment Alternative 1 would have avoided vernal pool landscapes and, thus, would have resulted in much less take of California tiger salamander and its suitable habitat than the Cross Valley Line. However, Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove. It was not selected by the CPUC; therefore, SCE is not authorized to build it.

Suitable breeding sites for California tiger salamander are located within Alignment Alternative 6 (i.e., in a seasonal pool located immediately east of Colvin Mountain and also in the easternmost half mile of Alignment Alternative 6). These suitable breeding sites would be spanned by power lines; if present, salamanders would likely be encountered in upland habitat (CPUC, 2009). The likelihood of take for Alignment Alternative 6 is comparable to that for the Cross Valley Line; thus, take of California tiger salamanders would not be reduced if this alternative alignment were selected.

A known breeding population of California tiger salamander is present in the Stone Corral Ecological Reserve, which would be traversed by Alignment Alternative 3 (CPUC, 2009). Because California salamanders are known to occur and breed in this location, as opposed to potentially occur and breed, implementing Alignment Alternative 3 would most likely increase take of California tiger salamanders, not reduce it.

Similar to the No Action Alternative, the Alignment Alternatives 4 and 5 were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

8.8 WESTERN SPADEFOOT TOAD

The western spadefoot toad is a California Department of Fish and Wildlife species of special concern that occurs in valley grassland and foothill habitats that are common throughout California’s Central Valley. Even though it is not exempted from take under the ESA, SCE has chosen to cover this species in the HCP, and it will be discussed as if it were listed in this chapter. Covered Activities would result in take of western spadefoot toad by grading that converts aquatic and upland habitat to nonhabitat and alters the hydrology of adjacent vernal pools/swales providing habitat, and temporary disturbance of vegetation and soils in work areas. Each of these mechanisms could result in harm or mortality of tadpoles or mature toads, including crushing by vehicles or equipment, and being entombed in collapsed burrows (see Section 4.3.1.5, Western Spadefoot Toad). As described for other Covered Species, minimization of take has been incorporated into the design of Cross Valley Line facilities and the implementation of Covered Activities (see Tables 2-2, 2-4, and 5-14). As a result of this minimization, implementing the Cross Valley Line would directly affect only approximately 1 percent of suitable breeding habitat for western spadefoot toad in the HCP Planning Area. Because feasible minimization has been included in the Covered Activities and HCP's conservation strategy, there are not additional feasible alternatives to the design of facilities or the implementation of construction and O&M Class 2 Covered Activities that would avoid or result in minimizing negative impacts on western spadefoot toads.

No Action Alternative

As described previously for vernal pool fairy shrimp, implementing the No Action Alternative would avoid take, but the alternative was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Alternatives to a New Transmission Line

As was described previously for other Covered Species, modifying existing facilities would have required less permanent loss and less temporary disturbance of western spadefoot toad habitat because most habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be much less than required for a new facility. Therefore, it would have resulted in less take of Covered Species that depend on these habitats, and may have avoided take altogether. However, alternatives relying primarily on modification of existing facilities would be neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

The demand management alternative would avoid take of western spadefoot toads and destruction or disturbance of their habitat, but was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Construction of new renewable or conventional energy sources may not have resulted in less take of western spadefoot toads and their habitat, depending on its location. However, most alternatives involving new energy sources would not have met project objectives, would still require transmission lines to interconnect to the grid, and would have resulted in environmental impacts comparable to, or potentially greater than, those of Alignment Alternative 1 or the Cross Valley Line, including take of Covered Species. For these reasons, these alternatives were not selected.

Alternative Transmission Line Alignments

The species requires vernal pool habitats for successful breeding and is, therefore, susceptible to land uses such as agriculture and development. Because take of western spadefoot toad primarily occurs in vernal pool landscapes, which are restricted in their distribution, the route of a transmission line strongly affects the amount of take. Alignment Alternative 1would have avoided suitable breeding habitat for western spadefoot toad in vernal pool landscapes and, thus, would have resulted in much less take of western spadefoot toad than the Cross Valley Line. However, Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove. It was not selected by the CPUC; therefore, SCE is not authorized to build it.

Alternative alignments for a transmission line were considered that would have met project objectives but traverse areas where western spadefoot toad and their habitats are known or have the potential to exist. Western spadefoot tadpoles were observed in April 2008 in a single ephemeral pool in the eastern grassland portion of Alignment Alternative 6 (Pittman, 2009, as cited in CPUC, 2009). Also, potential breeding sites are available within the Alternative 6 alignment, in a large seasonal pool located immediately east of Colvin Mountain, and also generally in the easternmost half mile of Alignment Alternative 6. These potential breeding sites would be spanned by power lines, although toads could be encountered in the construction activities of this alignment alternative. The occurrences of western spadefoot toad in Alignment Alternative 6 are comparable to those for the Cross Valley Line and would not reduce the likelihood of take of Covered Species.

This species is present in grasslands and seasonal wetland habitat in the right-of-way (ROW) for Alignment Alternative 3, in and near the Stone Corral Ecological Reserve (CPUC, 2009). The selection of Alignment Alternative 3 would not reduce the likelihood of negative impacts on the western spadefoot toad and its habitat.

Similar to the No Action Alternative, Alignment Alternatives 4 and 5 were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

8.9 LITTLE AND SOUTHWESTERN WILLOW FLYCATCHERS

Both the southwestern willow flycatcher and the little willow flycatcher are covered under this HCP because the two species cannot be distinguished in the field. In this section, the birds will be discussed as willow flycatchers. Willow flycatchers use deciduous thickets, especially willows, often near water (CPUC, 2009). Although Covered Activities would not result in direct loss of willow flycatcher habitat, this habitat and willow flycatchers that nest in it may be directly and indirectly affected by construction and O&M Covered Activities that occur adjacent to riparian areas (see Section 4.3.1.6, Little Willow Flycatcher, and Section 4.3.1.7, Southwestern Willow Flycatcher). Also, as described for other Covered Species, minimization of take has been incorporated into the design of Cross Valley Line facilities and the implementation of Covered Activities (see Tables 2-2, 2-4, and 5-14). As a result of this minimization, implementing the Cross Valley Line would not result in an temporary or permanent loss of riparian habitat in the HCP Planning Area, although temporary direct and indirect effects on this riparian habitat and nesting birds could occur. Because feasible minimization has been included in the Covered Activities and HCP's conservation strategy, there are not additional feasible alternatives to the design of facilities or the implementation of construction and O&M Class 2 Covered Activities that would avoid or result in less take of willow flycatchers.

This HCP would result in a net benefit to the species that alternatives to take would not have provided. The net benefit is primarily the result of enhancing riparian habitat along the St. John's River, in accordance with the Riparian Habitat Enhancement Plan (Appendix F).

No Action Alternative

As described previously for other Covered Species, implementing the No Action Alternative would avoid take of Covered Species, but the alternative was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Alternatives to a New Transmission Line

As was described previously for other Covered Species, modifying existing facilities would have required less permanent loss and less temporary disturbance of willow flycatcher habitat because most habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be much less than required for a new facility. Therefore, it would have resulted in less take of Covered Species that depend on these habitats, and may have avoided take altogether. However, alternatives relying primarily on modification of existing facilities would be neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

As previously described, the demand management alternative would avoid take of willow flycatchers and destruction or disturbance of their habitat, but was not selected because it would not meet project objectives and thus would not result in the provision of safe and reliable electric service to SCE customers.

Because the habitat for willow flycatchers is in riparian corridors that are linear features of all landscapes in the SCE service area, construction of new renewable or conventional energy sources may not have resulted in less take of willow flycatcher and their habitat, depending on its location. However, most alternatives involving new energy sources would not have met project objectives, would still require transmission lines to interconnect to the grid, and would have resulted in environmental impacts comparable to, or potentially greater than, those of Alignment Alternative 1 or the Cross Valley Line, including take of Covered Species. For these reasons, these alternatives were not selected.

Alternative Transmission Line Alignments

Because the habitat for willow flycatchers is in riparian corridors that are linear features of all landscapes in the SCE service area, construction of a transmission line with an alternative alignment could have resulted in comparable or greater amounts of take than the Cross Valley Line depending on the specific sites involved.

Alignment Alternative 1 would have met project objectives and would have affected much less natural vegetation. Thus, this alignment may have resulted in less take of willow flycatchers than the Cross Valley Line (which affects only a small amount of habitat). However, Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove. It was not selected by the CPUC; therefore, SCE is not authorized to build it.

Alignment Alternatives 3, 4, 5, and 6 would not affect less riparian habitat than the Cross Valley Line, and would not reduce the likelihood of negative impacts on willow flycatchers.

8.10 LEAST BELL’S VIREO

Although Covered Activities would not result in direct loss of least Bell’s vireo habitat, least Bell’s vireo may be directly and indirectly affected by construction and O&M Covered Activities that would occur adjacent to riparian areas (see Section 4.3.1.8, Least Bell’s Vireo). Least Bell’s vireo inhabits the same riparian woodland land cover types as willow flycatchers. Therefore, the alternatives to take of least Bell’s vireo are as described above for little and southwestern willow flycatchers. Further, this HCP would result in a net benefit to the species that alternatives to take would not have provided. The net benefit is primarily the result of enhancing riparian habitat along the St. John’s River in accordance with the Riparian Habitat Enhancement Plan (Appendix F).

8.11 BURROWING OWL

The burrowing owl nests and forages in low-growing grasslands with burrowing mammals. Where the number and availability of natural burrows is limited, owls may occupy human-made burrows such as drainage culverts, cavities under piles of rubble, discarded pipe, and other tunnel-like structures (Zeiner et al., 1990). Covered Activities would result in take of burrowing owl by conversion of grassland and agricultural habitat to non-habitat and temporary disturbance of soil and vegetation in work areas. Through these mechanisms, Covered Activities would cause a loss of habitat and could harass, harm, or kill burrowing owls, in particular where owls are nesting in burrows (see Section 4.3.1.9, Burrowing Owl). Minimization of take has been incorporated into the design of Cross Valley Line facilities and implementation of Covered Activities and the conservation strategy (see Tables 2-2, 2-4, and 5-14). As part of this minimization, pre-activity surveys would be conducted, buffers would be established around active burrows, and owls relocated from unavoidable burrows during construction and Class 2 O&M Covered Activities (see measures BUOW-1, BUOW-2, and BUOW-3 in Table 5-14). Because feasible minimization has been included in the Covered Activities and HCP's conservation strategy, there are not additional feasible alternatives to the design of facilities or the implementation of construction and O&M Class 2 Covered Activities that would avoid or result in less take of burrowing owl.

Although this HCP may result in take of burrowing owl, it also would result in a net benefit to the species that alternatives to take would not have provided. There are several reasons for this net benefit, including mitigating temporary impacts on habitat with permanent conservation. Further, the linear, narrow footprint of the Cross Valley Line's facilities in foraging habitat may result in only small effects on the prey base for individual burrowing owls, yet result in conservation that would benefit individual burrowing owls.

No Action Alternative

As described previously for other Covered Species, implementing the No Action Alternative would avoid take of burrowing owl, but the alternative was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Alternatives to a New Transmission Line

As was described previously for other Covered Species, modifying existing facilities would have required less permanent loss and less temporary disturbance of burrowing owl habitat because most habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be much less than required for a new facility. Therefore, it would have resulted in less take of Covered Species that depend on these habitats, and may have avoided take altogether. However, alternatives relying primarily on modification of existing facilities would be neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

As previously described, the demand management alternative would avoid take of burrowing owls and destruction or disturbance of their habitat, but was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Because the habitat for burrowing owl includes annual grassland and row/field crops that are widespread and extensive in the SCE service area, construction of new renewable or conventional energy sources may not have resulted in less take of burrowing owl and their habitat, depending on its location. However, most alternatives involving new energy sources would not have met project objectives, would require transmission facilities to interconnect to the grid, and would have resulted in environmental impacts comparable to, or potentially greater than, those of Alignment Alternative 1 and the Cross Valley Line, including take of Covered Species. For these reasons, these alternatives were not selected.

Alternative Transmission Line Alignments

Because the habitat for burrowing owl includes annual grassland and row/field crops that are widespread and extensive in the SCE service area, construction of a transmission line with an alternative alignment could have resulted in comparable or greater amounts of take than the Cross Valley Line, depending on the specific sites involved.

Alignment Alternative 1 would have met project objectives and would have affected much less natural vegetation. Thus, this alignment may have resulted in less take of burrowing owl than the Cross Valley Line. However, Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove. It was not selected by the CPUC; therefore, SCE is not authorized to build it.

Alignment Alternatives 4, 5, and 6 would have impacts on burrowing owls and their habitat similar to those under the Cross Valley Line and would not reduce the likelihood of take.

Burrowing owls are known to occur within the Stone Corral Ecological Reserve, which would be traversed by Alignment Alternative 3. The likelihood of take of burrowing owls would be increased, not reduced, with the implementation of Alignment Alternative 3.

8.12 SAN JOAQUIN KIT FOX

The San Joaquin kit fox requires open grassland and savannah habitats for foraging and dispersal. Covered Activities could result in take of San Joaquin kit fox by conversion of grassland (suitable for movement, foraging, and denning) and agricultural habitat (suitable for foraging and movement) to facility footprints, and temporary disturbance of soil and vegetation of habitat in work areas. These mechanisms also have the potential to harass, harm, or kill kit foxes, particularly if foxes were to den in the HCP Planning Area (see Section 4.3.1.10, San Joaquin Kit Fox).

Kit foxes will use habitats that have been extensively modified by humans, including grasslands and scrublands with active oil fields, wind turbines, and agricultural matrices. Dens are required year-round for reproduction, shelter, temperature regulation, and protection from predators. For this reason, the measures incorporated into the O&M Covered Activities are as important as those of the construction phase. Minimization of take has been incorporated into the design of Cross Valley Line facilities and implementation of Covered Activities and the conservation strategy (see Tables 2-2, 2-4, and 5-14). As part of this minimization, pre-activity surveys would be conducted, buffers would be established around active burrows and monitored, and monitors would clear construction sites of foxes as necessary during construction and Class 2 O&M Covered Activities (see measures SJKF-1 through SJKF-6 in Table 5-14). Because feasible minimization has been included in the Covered

Activities and HCP's conservation strategy, there are not feasible alternatives to the design of facilities or the implementation of construction and O&M Class 2 Covered Activities that would avoid or result in less take of San Joaquin kit fox.

Although this HCP may result in take of San Joaquin kit fox, it also would result in a net benefit to the species that alternatives to take would not have provided. There are several reasons for this net benefit: temporary impacts on habitat would be mitigated with permanent conservation, and much of the affected habitat is in a landscape of primarily agricultural and developed land uses that has limited habitat value (i.e., the landscape west of Friant-Kern Canal), whereas mitigation would conserve suitable habitat in a landscape of primarily natural land cover that is that has greater habitat value.

No Action Alternative

As described previously for other Covered Species, implementing the No Action Alternative would avoid take of San Joaquin kit fox, but the alternative was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Alternatives to a New Transmission Line

As was described previously for other Covered Species, modifying existing facilities would have required less permanent loss and less temporary disturbance of San Joaquin kit fox habitat because most habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be much less than required for a new facility. Therefore, it would have resulted in less take of Covered Species that depend on these habitats, and may have avoided take altogether. However, alternatives relying primarily on modification of existing facilities would be neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

As previously described, the demand management alternative would avoid take of San Joaquin kit fox and destruction or disturbance of their habitat, but was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Grasslands with friable soils are considered the principal habitat for denning, foraging, and dispersal, of San Joaquin kit fox, while open oak woodlands provide lower quality foraging and dispersal habitat. These land cover types are widespread and extensive in the SCE service area, and construction of new renewable or conventional energy sources may not have resulted in less take of San Joaquin kit fox and their habitat, depending on its location. However, most alternatives involving new energy sources would not have met project objectives or would not have been feasible, and such alternatives would have resulted in environmental impacts comparable to, or potentially greater than, those of Alignment Alternative 1 or the Cross Valley Line, including take of Covered Species. For these reasons, these alternatives were not selected.

Alternative Transmission Line Alignments

Because the habitat for San Joaquin kit fox includes annual grassland and agricultural land cover that are widespread and extensive in the SCE service area, and San Joaquin kit fox is a wide-ranging animal, construction of a transmission line with an alternative alignment could have resulted in comparable or greater amounts of take than the Cross Valley Line, depending on the specific sites involved. However, there is a high likelihood of San Joaquin kit fox occurring within all of the alignment alternatives considered in the EIR. So any of the alignment alternatives would probably not avoid, or even reduce take.

Alignment Alternative 1 would have met project objectives and would have affected much less natural vegetation. Although San Joaquin kit fox is known to occur in agricultural lands, as well as natural land cover types, this alignment may have resulted in less take of San Joaquin kit fox than the Cross Valley line. However, because Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove, it was not selected by the CPUC; therefore, SCE is not authorized to build it.

San Joaquin kit fox have been identified about 1 mile north of the Alignment Alternative 1 and in agricultural lands near Alternatives 2 (i.e., Cross Valley Line), 3, and 6 (DFG, 2009). Kit foxes are known to move frequently, relying on agricultural lands and croplands as well as annual grasslands. Based on the known distribution of this species and available habitat, there is a moderate potential that kit foxes may occur at one time or another within agricultural or grassland portions of the alternative alignments. So the likelihood of take of San Joaquin kit fox would not be reduced by the selection of any of the alignment alternatives.

Similar to the No Action Alternative, Alignment Alternatives 4 and 5 were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

8.13 HOOVER'S SPURGE

Hoover's spurge requires vernal pools as habitat. Covered Activities would traverse designated critical habitat for this species, potentially adversely modifying it, resulting in loss of primary constituent elements of designated critical habitat for Hoover's spurge by grading that converts habitat to nonhabitat and alters the hydrology of adjacent vernal pools/swales, and temporary disturbance of vegetation and soils in work areas. During development of the Cross Valley Line, the design of facilities was modified to reduce effects on Hoover's spurge designated critical habitat, and the Cross Valley Line would directly affect only approximately 1 percent of vernal pools/swales that support primary constituent elements of designated critical habitat for Hoover's spurge in the HCP Planning Area; thus, adverse effects on designated critical habitat would be minimized. Minimization measures have been incorporated into the Class 2 O&M Covered Activities, and additional species- and habitat-specific measures to further reduce take would also be implemented as part of this HCP (see Tables 2-2, 2-4, and measures VP-1 and VP-2 in Table 5-14).

No Action Alternative

As described previously for other Covered Species, implementing the No Action Alternative would avoid destruction of designated critical habitat for Hoover's spurge, but the alternative was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Alternatives to a New Transmission Line

Modifying existing facilities would have required less permanent loss and less temporary disturbance of designated critical habitat for Hoover's spurge because most of this habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be much less than required for a new facility. Therefore, it would have resulted in less amount of potential adverse modification to designated critical habitat for Hoover's spurge, and may have avoided it altogether. However, alternatives relying primarily on modification of existing facilities would be neither technically feasible nor capable of meeting project objectives. Therefore, similar to the No Action Alternative, these alternatives were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

Demand management through an energy conservation program or similar action would not have resulted in any loss or disturbance of vernal pool habitat, and thus would have avoided impacts on primary constituent elements of Hoover's spurge designated critical habitat. However, alternatives based on demand management would not meet project objectives because a substantial reduction in demand within the SCE service area would be necessary to meet project objectives, and such a reduction is not feasible in the foreseeable future through an energy conservation program or similar action. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

Construction of new renewable or conventional energy sources may not have resulted in a reduced impact on primary constituent elements of Hoover's spurge designated critical habitat, depending on its location. However, most alternatives involving new energy sources would not have met project's objectives or would not have been feasible, and such alternatives would have resulted in environmental impacts comparable to, or potentially greater than, those of Alignment Alternative 1 or the Cross Valley Line, including take of Covered Species. For these reasons, these alternatives were not selected.

Alternative Transmission Line Alignments

Because the primary constituent elements of Hoover's spurge designated critical habitat occur in vernal pool landscapes, which are restricted in their distribution, the route of a transmission line strongly affects the amount of take. Three alternatives to Alignment Alternative 1 were considered in the EIR that would have met project objectives.

Alignment Alternative 1 would have avoided vernal pool landscapes and thus would have resulted in less impact on the primary constituent elements of Hoover's spurge designated critical habitat than the Cross Valley Line. However, Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove. It was not selected by the CPUC; therefore, SCE is not authorized to build it.

Alignment Alternative 3 would result in the most significant unmitigable impacts on northern claypan vernal pool habitat and on the primary constituent elements of Hoover's spurge designated critical habitat because it would traverse vernal pool habitat that is protected in the Stone Corral Ecological Reserve.

Alignment Alternative 6 would not reduce impacts on the primary constituent elements of Hoover's spurge designated critical habitat because the alignment would traverse approximately 3 miles of designated critical habitat for this species, and the construction and O&M Covered Activities would result in comparable impacts on Hoover's spurge, including potential adverse modification of critical habitat for the species, as compared to the Cross Valley Line.

Similar to the No Action Alternative, Alignment Alternatives 4 and 5 were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

8.14 SAN JOAQUIN ORCUTT GRASS

San Joaquin Valley Orcutt grass requires vernal pools as habitat. Covered Activities would traverse designated critical habitat for this species, potentially adversely modifying it, resulting in loss of primary constituent elements of designated critical habitat for San Joaquin Valley Orcutt grass by grading that converts habitat to nonhabitat and alters the hydrology of adjacent vernal pools/swales, and temporary disturbance of vegetation and soils in work areas. During development of the Cross Valley Line, the design of facilities was modified to reduce effects on San Joaquin Valley Orcutt grass designated critical habitat, and the Cross Valley Line would directly affect only approximately 1 percent of vernal pools/swales that support primary constituent elements of designated critical habitat for San Joaquin Valley Orcutt grass in the HCP Planning Area; thus, adverse effects on designated critical habitat would be minimized. Minimization measures have been incorporated into the Class 2 O&M Covered Activities, and additional species- and habitat-specific measures to further reduce take would also be implemented as part of this HCP (see Tables 2-2, 2-4, and measures VP-1 and VP-2 in Table 5-14).

The breadth of designated critical habitat for San Joaquin Valley Orcutt grass is similar to that for Hoover's spurge, as are the primary constituent elements for these species. Thus, the minimization measures incorporated into the Covered Activities and the alternatives to take are, as described above for Hoover's spurge, similar for San Joaquin Valley Orcutt grass.

8.15 SPINY-SEPALED BUTTON-CELERY

Spiny-sepaled button-celery requires vernal pools or grassland as habitat. Covered Activities would result in take of spiny-sepaled button-celery by grading that converts habitat to nonhabitat and alters the hydrology of adjacent vernal pools/swales providing habitat, and temporary disturbance of vegetation and soils in work areas. Each of these mechanisms would also result in harm and destruction of spiny-sepaled button-celery plants. During development of the Cross Valley Line, the design of facilities was modified to reduce effects on occupied habitat for this species. Minimization of take has been incorporated into the construction and Class 2 O&M Covered Activities, and additional species- and habitat-specific measures to further reduce take would also be implemented as part of this HCP (see Tables 2-2, 2-4, and measures VP-1 and VP-2 in Table 5-14).

No Action Alternative

As described previously for other Covered Species, implementing the No Action alternative would avoid take of spiny-sepaled button-celery, but the alternative was not selected because it would not meet project objectives and, thus, would not result in the provision of safe and reliable electric service to SCE customers.

Alternatives to a New Transmission Line

Modifying existing facilities would have required less permanent loss and less temporary disturbance of occupied habitat for spiny-sepaled button celery because most habitat at existing facilities has already been permanently lost and the expansion of facility footprints would be much less than required for a new facility. Therefore, it would have resulted in less take of spiny-sepaled button celery occupied habitat, and may have avoided take altogether. However, alternatives relying primarily on modification of existing facilities would not be both technically feasible and capable of meeting project objectives. Therefore, similar to the No Action Alternative, the alternatives associated with modifying new facilities were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

Demand management through an energy conservation program or similar action would not have resulted in any loss or disturbance of occupied habitat, and thus would have avoided take of spiny-sepaled button-celery. However, alternatives based on demand management would not meet project objectives because a substantial reduction in demand within the SCE service area would be necessary to meet project objectives, and such a reduction is not feasible in the foreseeable future through an energy conservation program or similar action. Therefore, similar to the No Action Alternative, these alternatives were not selected because they would prevent SCE from meeting its mandate to provide safe and reliable electric service to SCE customers.

Construction of new renewable or conventional energy sources may not have resulted in less take of spiny-sepaled button celery, depending on its location. However, most alternatives involving new energy sources would not have met project objectives or would not have been feasible, and such alternatives would have resulted in environmental impacts comparable to, or potentially greater than, those of Alignment Alternative 1 or the Cross Valley Line, including take of Covered Species. For these reasons, these alternatives were not selected.

Alternative Transmission Line Alignments

Because take of spiny-sepaled button-celery occurs in vernal pool landscapes, which are restricted in their distribution, the route of a transmission line strongly affects the amount of take. Three alternatives to Alignment Alternative 1 were considered in the EIR that would have met project objectives.

Alignment Alternative 1 avoided vernal pool landscapes and, thus, would have resulted in less take of spiny-sepaled button-celery than the Cross Valley Line. However, Alignment Alternative 1 would have resulted in greater impacts on agricultural resources and the communities of Farmersville and Lemon Cove. It was not selected by the CPUC; therefore, SCE is not authorized to build it.

Alignment Alternative 3 would result in the most significant unmitigable impacts on northern claypan vernal pool habitat, and to spiny-sepaled button-celery, because it would traverse vernal pool habitat that is protected in the Stone Corral Ecological Reserve. This species is also reported from the easternmost 3 miles of the Alternative 3 ROW, as well as on jurisdictional waters of the United States and waters of the State, including drainages and seasonal wetlands.

Alignment Alternatives 4, 5, and 6 would not reduce take because the alignment would result comparable impacts on spiny-sepaled button-celery as compared to the Cross Valley Line.

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10 ACRONYMS

°F	degrees Fahrenheit
AMM	avoidance and minimization measure
Big Creek-Rector No. 2	Big Creek 3-Rector No. 2 220 kV transmission line
BMP	best management practice
BUOW	burrowing owl
C	construction
CAISO	California Independent System Operator Corporation
CAL FIRE	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
C.F.R.	Code of Federal Regulations
cm	centimeter(s)
CNDDB	California Natural Diversity Database
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission
Cross Valley Line	Southern California Edison Cross Valley Transmission Line
CRPR	California Rare Plant Rank
CTS	California tiger salamander
CWHR	California Wildlife Habitat Relationships
EA	environmental assessment
EIR	environmental impact report
EIS	environmental impact statement
ESA	Federal Endangered Species Act
ESF	Environmental Screening Form
FKC	Friant-Kern Canal
Fed. Reg.	*Federal Register*
FRED	Field Reporting Environmental Database
GIS	Geographic Information System
HCP	habitat conservation plan
HOSP	Hoover's spurge
HUC	Hydrologic Unit Code

ITP	incidental take permit
km	kilometer(s)
kV	kilovolt(s)
LBV	least bell’s vireo
LST	lattice steel tower
LTA	Land Trust Alliance
LWF	little willow flycatcher
MCV	*Manual of California Vegetation*
MMRCP	mitigation monitoring, reporting, and compliance program
mph	miles per hour
NEPA	National Environmental Policy Act
O&M	operations and maintenance
OPGW	optical ground wire
PCE	primary constituent element
Permittee	Southern California Edison
PD	planning and design
PRC	California Public Resources Code
Project	San Joaquin Cross Valley Loop 220 kV Transmission Line Project
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
Rector-Springville	Rector-Springville 220 kV transmission line
ROW	right-of-way
SCE	Southern California Edison
SJKF	San Joaquin kit fox
SJVOG	San Joaquin Valley Orcutt grass
SSBC	spiny-sepaled button-celery
SWF	southwestern willow flycatcher
SWPPP	storm water pollution prevention plan
TBD	to be determined
TSP	tubular steel pole
U.S.C.	U.S. Code
USFWS	U.S. Fish and Wildlife Service

VELB	valley elderberry longhorn beetle
VP	vernal pool
VPFS	vernal pool fairy shrimp
VPTS	vernal pool tadpole shrimp
WEAP	worker environmental awareness program
WSFT	western spadefoot toad

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11 GLOSSARY

Access Roads—roads that connect one transmission structure with another.

Action—all activities authorized or funded in whole or in part by Federal agencies, including but not limited to actions intended to conserve listed species or their habitats; the granting of licenses, contracts, and permits; and actions directly or indirectly causing modifications to the land, water, or air (50 C.F.R. 402.02). In this document, the action is the issuance of an incidental take permit and implementation of the habitat conservation plan (which includes implementation of the HCP Covered Activities, implementation of the HCP Conservation Strategy, and implementation of the HCP Monitoring Plan and Adaptive Management Plan).

Adverse Modification—the direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species, including but not limited to alterations adversely modifying any of the primary constituent elements. (50 C.F.R. 402.02.) Primary constituent elements referred to in this definition of adverse modification are the physical and biological features essential to the conservation of the species, including but not limited to (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

Aestivation—state of animal dormancy similar to hibernation characterized by inactivity and a lowered metabolic rate that is entered in response to high temperatures and arid conditions.

Anchor/Guy Wires—wires from transmission structures to the ground that further stabilize the transmission structures.

Auger—large drill designed to drill holes into the soil for transmission structure foundations. The auger may be crane mounted, truck mounted, or tractor mounted.

Bird Flight Diverters—small structures of various designs that fit on the conductors between structures to make the conductors more visible to flying birds.

Branchiopod—a class of primarily freshwater crustaceans that feed on plankton and detritus.

Bundling of Conductor—expansion of the capacity of a conductor to handle electrical load by adding another conductor to the existing conductor or by replacing the existing conductor with a larger conductor.

Carapace—the upper section of the exoskeleton or shell in a number of animals such as crustaceans and turtles.

Changed Circumstances—changes in circumstances affecting a species or geographic area covered by a habitat conservation plan that can reasonably be anticipated and planned for by plan developers and the U.S. Fish and Wildlife Service (50 C.F.R. 17.3).

Ciliates—a group of protozoans characterized by the presence of hair like organelles called cilia.

Clearing—the activity of removing vegetation before grading a site.

Compliance Monitoring—monitoring that verifies that the permittee is carrying out the terms of the habitat conservation plan and permit (65 Fed. Reg. 35241–35257, June 1, 2000).

Conductor—metal (normally steel or an alloy) that conducts the electricity.

Covered Activities—activities authorized by a permit under Section 10(a)(1)(B) of the Endangered Species Act for any taking otherwise prohibited by Section 9(a)(1)(B) of the ESA if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Cranes—wheel-mounted, truck-mounted, or tracked machinery with a boom that is used for lifting of structures on other material into place.

Crepuscular—period of activity at twilight hours at dawn and dusk.

Critical Habitat—(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of Section 4 of the Endangered Species Act, on which are found those physical or biological features (I) essential to the conservation of the species, and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of the ESA, upon a determination by the Secretary of the Department of Interior that such areas are essential for the conservation of the species (ESA Section 3[5][A]).

Cysts—a dormant stage of an invertebrate animal that helps it survive unfavorable environmental conditions.

Desiccation—the state or process of extreme drying.

Diapause—the delay in development of an organism in response to regularly and recurring periods of adverse environmental conditions.

Direct Effects—a direct result of an action that occurs at the same time and place (USFWS 1996).

Discountable Effects—effects that are extremely unlikely to occur. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur (USFWS 1998).

Distribution Line—lower voltage electrical lines that carry electricity from substations to homes and businesses.

Effectiveness Monitoring—monitoring that evaluates if the operating conservation program of the habitat conservation plan is consistent with the assumptions and predictions made when the habitat conservation plan was developed and approved (65 Fed. Reg. 35241–35257); if the biological goals are being met; and if the conservation strategy is being properly implemented.

Effects Monitoring—monitoring that evaluates the actual effects of construction and operations and maintenance Covered Activities on Covered Species and designated critical habitat to verify that effects do not exceed estimates provided in Chapter 4, Impact Assessment and Level of Take.

Effects of the Action—the direct and indirect effects of an action on a species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will add to the existing environmental baseline. The environmental baseline includes the past and present impacts of all Federal, State, and private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process.

Environmentally Sensitive Area—a zone demarcated to preserve sensitive biological resources and in which construction and operations and maintenance Covered Activities are precluded to the extent practicable.

Facility Footprint—areas where the ground surface would be occupied by a constructed facility (e.g., the foundation of a road or tower). These areas would be graded, compacted, and maintained clear of vegetation.

Finish Grading—completion of grading to final contours.

Fossorial—the habit of living underground.

Glumes—one of the two chaffy basal bracts of a grass spikelet.

Grubbing—removal of roots and other subsurface vegetative material after removal of surface vegetation.

Habitat Resilience—the ability of habitats to recover from disturbance, which differs with the nature and magnitude of the disturbance and with the ecology of land cover types.

Harass—an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering (50 C.F.R. 17.3).

Harm—physical harm to individuals and “significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering” (50 C.F.R. 17.3).

High Disturbance Work Areas—areas where the ground surface would be significantly modified (i.e., graded, compacted, and revegetated) to allow for implementation of construction and operations and maintenance Covered Activities.

Holocene—a geological period that began at the end of the Pleistocene (12,000 years ago) and continues to the present.

Hydrological Regime—the long-term spatial variation in the water depths and period of inundation within a wetland system.

Hydromulch—organic material that is mixed with water and frequently plant seed and fertilizer and sprayed on ground and slopes.

Indirect Effects—those effects that are caused by the proposed action (in this case, issuance of the incidental take permit and the Covered Activities) and are later in time, but are still reasonably certain to occur (50 C.F.R. 402.02).

Inflorescence—a group or cluster of flowers arranged on a stem that is composed of a main branch or a complicated arrangement of branches.

Insignificant Effects—effects that are less than the scale where take occurs (USFWS 1998).

Insulator—structure used to fasten to the transmission structure conductors that do not conduct electricity.

Inundation Period—the period within a season that a seasonal depression such as a vernal pool retains water.

Land Cover Conversion—areas permanently converted from land cover providing suitable habitat to land cover that does not provide the same quality or amount of habitat for Covered Species.

Laydown Yard—a construction material storage area.

Low Disturbance Work Areas—areas where the ground surface would be minimally disturbed (i.e., not graded, not compacted, and revegetated) to allow for implementation of construction and operations and maintenance Covered Activities.

Metamorphosis—a biological process by which an animal undergoes a conspicuous change in body structure that is usually accompanied by a change of habitat or behavior.

Morphology—the form and structure on an organism and its specific features.

Natal—place of birth.

Occupied Habitat—habitat known to be used by Covered Species.

Optical Ground Wire (OPGW)—wire usually placed on top of transmission structures that serves the dual purpose of shielding the structure and conductors from lightning strikes and providing communications to the substations.

Permanent Effects—effects that persist after completion of a Covered Activity, and from which habitats may not fully recover. This habitat conservation plan considers effects on species' habitat that persist for more than 12 months to be permanent.

Phenology—life cycle events of a plant or animal in response to seasonal and interannual variations in climate.

Pleistocene—geological epoch which lasted from 2,588,000 to 11,700 years ago, which spans the world's recent period of repeated glaciations.

Primary Constituent Elements—those physical and biological features of a landscape that a species needs to survive and reproduce.

Rebar—reinforcing steel bar used to reinforce concrete structures before the concrete is poured.

Refugia—an area that provides shelter from ecological or environmental changes occurring elsewhere.

Restringing of Conductor—replacement of conductors with new conductors.

Riprap—erosion control device made of medium to large stones normally lining channels and ditches.

Rough Grading—initial grading of features such as roads and building pads before final contouring.

Sensitivity of Habitat Use—a level of sensitivity of the Covered Species' use of the habitat to persistent alterations resulting from Covered Activities that would vary with the type of use and with the ecology of the Covered Species.

Slurry—mixture of clay or other materials with water.

Substation—an electrical facility used to reduce the voltage of the electrical lines.

Suitable Habitat—habitat that contains features required by special-status species, but where no individuals have been confirmed within the habitat.

Swales—small channels or drainages.

Swan Flight Diverter—a curving metal device installed to twine around the optical ground wire to provide a visual reference point for flying birds to avoid the power lines.

Take—to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct (Endangered Species Act, Section 3[19]).

Temporary Effects—effects that occur during and/or immediately following a Covered Activity, but diminish to insignificant levels as habitat recovers. This habitat conservation plan considers effects on species' habitat that persist for less than 12 months to be temporary.

Transmission Lines—higher voltage electrical lines used to convey electricity from the generating source to a substation.

Turbidity—the cloudiness of a fluid caused by individual particles suspended within.

Unforeseen Circumstances—changes in circumstances affecting a species or geographic area covered by a habitat conservation plan that could not reasonably have been anticipated by plan developers and the U.S.

Fish and Wildlife Service at the time of the plan's negotiation and development, and that result in a substantial and adverse change in status of the Covered Species (50 C.F.R. 17.3).

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