

Biological and Conference Opinion

on

**U.S. Fish and Wildlife Service Proposed Issuance of a
Section 10(a)(1)(B) Permit
for the Western Placer County Habitat Conservation
Plan/Natural Community Conservation Plan**

and

**U.S. Army Corps of Engineers Proposed Authorization and
Implementation of a Clean Water Act Section 404 Permit
Strategy Aligned with the Placer County Conservation
Program**

December 1, 2020

File Number 81420-2009-F-0520

U.S. Fish and Wildlife Service
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Recommended citation for this document:

U.S. Fish and Wildlife Service. 2020. Biological and Conference Opinion on the U.S. Fish and Wildlife Service Issuance of a Section 10(a)(1)(B) Permit for the Western Placer Habitat Conservation Plan/Natural Community Conservation Plan and the U.S. Army Corps of Engineers Authorization and Implementation of a Clean Water Act Section 404 Permit Strategy Aligned With the Placer County Conservation Program. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, CA.

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In Reply Refer to:
81420-2009-F-0520

December 1, 2020

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Subject: Biological Opinion and Conference Opinion on the U.S Fish and Wildlife Issuance of a Section 10(a)(1)(B) Permit for the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan and on the U.S. Army Corps of Engineers Proposed Authorization and Implementation of a Clean Water Act Section 404 Permit Strategy Aligned with the Placer County Conservation Program

In accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act) and its implementing regulations (50 CFR §402), this document transmits the biological and conference opinion (Biological Opinion) of the U.S. Fish and Wildlife Service (Service), Sacramento Fish and Wildlife Office, regarding: (1) the U.S. Fish and Wildlife Service California-Great Basin Region's proposed issuance of a section 10(a)(1)(B) incidental take permit to Placer County (County), City of Lincoln (Lincoln or City), Placer County Water Agency, South Placer Regional Transportation Authority, and the Placer Conservation Authority (collectively referred to as the "Applicants" or "Permittees") for the implementation of the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan (Plan); and (2) the U.S. Army Corps of Engineers (Corps) proposed authorization and implementation of the Clean Water Act 404 Permit Strategy Aligned with the Placer County Conservation Program (Placer County Conservation Program Clean Water Act 404 Permit Strategy).

The Applicants have developed the Plan, a County Aquatic Resources Program (CARP) (Placer County 2020) for permitting activities covered under the Plan that impact aquatic resources, and an In-Lieu Fee Program, under which compensatory mitigation requirements under Section 404 of the Clean Water Act for an individual project or activity can be fulfilled by payment of a fee. Together, the Plan, the CARP, and the In-lieu Fee Program are referred to as the Placer County Conservation Program. The Placer Conservation Authority, a joint powers authority formed for the purposes of implementing the Placer County Conservation Program, will be the “implementing entity” for the Plan and will have primary responsibility for implementing the Plan. See Section 2.1.3 below for a more detailed description of each of these elements.

At issue are the effects of the proposed incidental take permit, the effects of the proposed Plan, and the effects of the proposed Placer County Conservation Program Clean Water Act 404 Permit Strategy on 14 wildlife species (collectively “Covered Species”) listed below. In addition, this Biological Opinion analyzes effects to designated critical habitat for vernal pool fairy shrimp. Seven of the species proposed for coverage are currently listed as federally threatened (T) or endangered (E). Seven currently unlisted species would also be Covered Species and included on the incidental take permit. Although take of non-listed species is not prohibited under the Act and, therefore, cannot be authorized under an incidental take permit, these species would be included on the incidental take permit in recognition of the conservation benefits provided to the species under the Plan. Should any of the non-listed Covered Species become listed under the Act during the life of the incidental take permit, the incidental take permit would then also cover those species. Assurances provided to Permittees under the “No Surprises” rule at 50 CFR 17.13, 17.22(b)(5) and 17.32(b)(5) extends to all Covered Species. The "No Surprises" regulations are not applicable to the Corps' action.

Two of the Covered Species are fish species (Central Valley steelhead and Central Valley fall/late-fall chinook salmon) that are under the jurisdiction of the National Marine Fisheries Service. Incidental take for these two species would be included on a section 10(a)(1)(B) incidental take permit issued by the National Marine Fisheries Service and would not be included on the incidental take permit issued by the Service. Effects to these two fish species will be considered in a separate biological opinion prepared by National Marine Fisheries Service.

Covered Species

1. Vernal pool fairy shrimp (*Branchinecta lynchi*) (T)
2. Vernal pool tadpole shrimp (*Lepidurus packardii*) (E)
3. Conservancy fairy shrimp (*Branchinecta conservatio*) (E)
4. Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (T)
5. Central Valley steelhead (*Oncorhynchus mykiss irideus*) (T; National Marine Fisheries Service)
6. Central Valley fall/late-fall chinook salmon (*Oncorhynchus tshawytscha*; National Marine Fisheries Service)
7. California red-legged frog (*Rana draytonii*) (T)
8. Foothill yellow-legged frog (*Rana boylei*)
9. Western pond turtle (*Emys marmorata*)
10. Giant garter snake (*Thamnophis gigas*) (T)
11. Western burrowing owl (*Athene cunicularia hypugaea*)

12. Tricolored blackbird (*Agelaius tricolor*)
13. Swainson's hawk (*Buteo swainsoni*)
14. California black rail (*Laterallus jamaicensis coturniculus*)

The Plan is intended to meet the requirements for a habitat conservation plan pursuant to section 10(a)(2)(A) of the Act. To fulfill this purpose, the Plan provides a conservation strategy (hereafter referred to as the Conservation Strategy) that includes measures to minimize and mitigate the impact of the taking to the maximum extent practicable for the 14 Covered Species in perpetuity, and to meet the State Natural Community Conservation Planning Act by contributing to the conservation of the species within the Plan Area. Incidental take to the Permittees will be authorized for all listed Covered Species upon the execution of the Implementing Agreement by all Parties; issuance of both State and Federal Permits; and City and County local implementing ordinances take effect. The Permittees will implement the Plan's Conservation Strategy measures for each Covered Species, regardless of their current listing status. Incidental take to the Corps will be authorized when the Service issues this Biological Opinion.

To help formulate this Biological Opinion, on May 11, 2020, an official list of threatened and endangered species under the Service's jurisdiction, that may be affected by Plan implementation, was created using the Service's Information for Planning and Consultation (IPaC) website (Appendix A). The effect of the Service's permitting actions, resulting in Plan implementation, was then evaluated for each species included on the IPaC list and on designated critical habitat by completing the Intra-Service Section 7 Biological Evaluation Form (Appendix B).

Based on the biological evaluations, the Service finds that the proposed action may affect, but is not likely to adversely affect, the California tiger salamander (*Ambystoma californiense*), Layne's butterweed (*Senecio layneae*), Sacramento Orcutt grass (*Orcuttia viscida*) or Stebbin's morning-glory (*Calystegia stebbinsii*). Because conservation actions are the only Plan activities that will occur within designated critical habitat for California red-legged frog the Service finds that the proposed action is not likely to adversely affect critical habitat for California red-legged frog. If an individual project, that would also be a Covered Activity, is likely to adversely affect a listed species that is not a Covered Species, that project is not covered by the incidental take permit and will be analyzed on a project-by-project basis by the Service via a separate section 7 consultation, or separate section 10 permit, as appropriate.

For complete species and critical habitat evaluations, including evaluations of species and critical habitat where no effect is expected as a result of proposed actions, please refer to Appendices A and B.

This Biological Opinion analyzes the effects of the issuance a section 10(a)(1)(B) incidental take permit for the implementation of the Conservation Plan on the Covered Species listed above (with the exception of Central Valley steelhead and Central Valley fall/late-fall chinook salmon, which will be considered in a separate biological opinion prepared by National Marine Fisheries Service), and on critical habitat for vernal pool fairy shrimp. This Biological Opinion was prepared in accordance with the requirements of section 7 of the Act (16 U.S.C. 1531 *et seq.*) and its implementing regulations at 50 CFR §402.

This Biological Opinion was prepared using the following information:

- Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan, February 2020 (Placer County et al. 2020), prepared by ICF for the Placer County Planning Services Division and noticed in the Federal Register on May 22, 2020 (85 FR 31203) (hereby incorporated by reference);
- Placer County Conservation Program Final Environmental Impact Statement/Environmental Impact Report, May 2020 (Service and Placer County 2020), prepared by ICF for the Service and Placer County and noticed in the Federal Register on May 22, 2020 (85 FR 31203) (hereby incorporated by reference);
- Electronic mail correspondence, telephone conversations, site visits, and meetings between the Service and the Applicants between 2000-2020;
- References cited in this Biological Opinion; and
- Other information available to the Service.

1. CONSULTATION HISTORY

2000-2020	Numerous meetings, correspondence, and telephone calls between the Service, the California Department of Fish and Wildlife, Corps, and the Permittees concerning the development of the Conservation Plan; most notably discussions concerning the area, activities and species to be covered, and the Conservation Strategy.
October 2001	Placer County, National Marine Fisheries Service, the Service and California Department of Fish and Wildlife executed the Planning Agreement to develop a habitat conservation plan/natural community conservation plan.
October 2001	The Biological Working Group for the Conservation Plan was established.
January 2004	<i>Report of the Science Advisors for the Placer County Natural Communities Conservation Plan and Habitat Conservation Plan: Planning Principles, Uncertainties, and Management Recommendations</i> (Brussard et al. 2004) was published.
February 2005	The first draft of the Conservation Plan was provided for Wildlife Agencies' review; the draft included 33 plant and animal species.
March-April 2005	Joint Notice of Intent and Notice of Preparation were published for a proposed joint Environmental Impact Statement/Environmental Impact Report for the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan. Public meetings were held March 15-17, 2005; public comment period ended April 6, 2005.

- September 2007 An Ad Hoc Committee consisting of two elected representatives from the Placer County Board of Supervisors and the City Council for the City of Lincoln was formed to provide a coordinated framework for decision-making.
- September 2008 The Placer County Board of Supervisors unanimously adopted the Ad Hoc Committee's recommendations to work with partners (City of Lincoln, Placer County Water Agency, and South Placer Regional Transportation Authority), and to coordinate with the public and resource agencies to finish the work plan and prepare a second draft of the Conservation Plan.
- December 2011 The first amendment to the Planning Agreement was signed by all agencies, extending the Planning Agreement until December 2015.
- February 2011 The second draft of the Conservation Plan was provided to the Wildlife Agencies; the draft included 31 plant and animal species.
- November 2015 The Corps agreed to participate as a cooperating agency for the Placer County Habitat Conservation Plan's National Environmental Policy Act process.
- December 2015 The second amendment to the Planning Agreement was signed by all agencies, extending the Planning Agreement until December 2018.
- December 2015 The Western Placer County In-lieu Fee Program Prospectus was submitted for review.
- May 2017 A revised draft of the Conservation Plan was provided to the Wildlife Agencies.
- December 2018 The third amendment to the Planning Agreement was signed by all agencies, extending the Planning Agreement until December 2019.
- January 2019 Placer County and the Placer Conservation Authority, the City of Lincoln, Placer County Water Agency, and South Placer Regional Transportation Authority submitted applications for 10(a)(1)(B) permits for take authorization.
- June-August 2019 The Draft Environmental Impact Statement/Environmental Impact Report, Draft Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan, Draft County Aquatic Resources Program (CARP), and Draft Corps' Placer County Conservation Program Clean Water Act 404 Permit Strategy released for public review and comment; public meetings were held August 8-15, 2019.
- December 2019 The fourth amendment to the Planning Agreement was signed by all agencies, extending the Planning Agreement until December 2020.

May 2020 The Final Environmental Impact Statement/Environmental Impact Report, Final Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan, Final CARP, and Final Corps' Placer County Conservation Program Clean Water Act 404 Permit Strategy was released for public inspection.

2. BIOLOGICAL OPINION AND CONFERENCE OPINION

2.1 Description of the Proposed Actions

This Biological Opinion addresses two proposed federal actions: the Service's proposed issuance of a section 10(a)(1)(B) incidental take permit for the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan, and the Corps' proposed approval and implementation of a Clean Water Act 404 Permit Strategy Aligned with the Placer County Conservation Program.

2.1.1 U.S. Fish and Wildlife Proposed Action

Under section 10(a)(1)(B) of the Act, the Service is proposing the issuance of an incidental take permit for the implementation of the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan. The Plan is a regional conservation plan developed by the Applicants to achieve the permit issuance criteria in section 10(a)(2)(A) of the Act. To evaluate the effects of this proposed action on listed and other Covered Species and critical habitat, a summary of the Plan is contained within this Biological Opinion. Components of the Plan that are relevant to the effects analysis of this Biological Opinion are incorporated in the following subsections. For a comprehensive description of the proposed action, refer to the Conservation Plan (Placer County et al. 2020).

2.1.2 U.S. Army Corps of Engineers Proposed Action

The U.S. Army Corps of Engineers, Sacramento District, is proposing to approve and implement the Placer County Conservation Program Clean Water Act 404 Permit Strategy, summarized below. For a comprehensive description of the proposed Placer County Conservation Program Clean Water Act 404 Permit Strategy, see Appendix C of the Placer County Conservation Program Final Environmental Impact Statement/Environmental Impact Report, circulated for public review on May 22, 2020 (Service and Placer County 2020). The Placer County Conservation Program Clean Water Act 404 Permit Strategy includes the Corps' proposed issuance of a Programmatic General Permit, two Regional General Permits, and the establishment of abbreviated processes for issuing letters of permission and standard permits (these permits are described in more detail below).

The Placer County Conservation Program Clean Water Act 404 Permit Strategy provides an approach to authorizing placement of dredged or fill material into waters of the U.S. within the Plan Area (see Section 2.1.4 below for a description of the Plan Area), pursuant to section 404 of the Clean Water Act for Covered Activities as defined in the Plan (see Section 2.2 below for a description of Covered Activities) that involve a discharge of dredged or fill material into waters of the U.S. The Placer County Conservation Program Clean Water Act 404 Permit Strategy relies on the Conservation Strategy in the Plan (see Section 2.3 below for a description of the

Conservation Strategy), and mirrored in the final Western Placer County Aquatic Resources Program (CARP) (Placer County 2020) developed by the County as a basis for Clean Water Act 404 permitting. The CARP describes measures to avoid and minimize impacts to aquatic resources, and to address compensatory mitigation requirements for Covered Activities with unavoidable impacts to aquatic resources, consistent with requirements of the Conservation Plan.

The procedures and associated requirements for the Clean Water Act 404 permits will integrate with those contained in the Plan, resulting in consistent implementation of the Plan and Clean Water Act 404 permitting under the Placer County Conservation Program Clean Water Act 404 Permit Strategy. Implementation of compensatory mitigation projects will be located on Plan reserve lands and will be consistent with the Plan's Conservation Strategy, including Plan requirements regarding the re-establishment and establishment of aquatic resources. An in-lieu fee program will provide compensatory mitigation for impacts from Covered Activities (In-lieu Fee Program). Payment of Plan fees into the In-lieu Fee Program to purchase credits will fulfill compensatory mitigation required for Covered Activities under the Placer County Conservation Program Clean Water Act 404 Permit Strategy.

The proposed Regional General Permits and Programmatic General Permit are valid for 5 years from the date of issuance (or reissuance). The letter of permission procedure and the abbreviated standard permit process will be applied to specific activities that do not qualify for inclusion in the Regional General Permits or Programmatic General Permit, and may be used throughout the Conservation Plan's permit term of 50 years. Because activities authorized through the Placer County Conservation Program Clean Water Act 404 Permit Strategy are a subset of Covered Activities of the Plan that are analyzed in this Biological Opinion, the Service will consider this Biological Opinion valid for a period of fifty years, as long as the Service's incidental take permit is in good standing, or unless new information reveals effects of the Corps' proposed action may result in adverse effects to federally listed species or designated critical habitat in a manner not analyzed in this biological opinion, or if a new species is listed that may be affected by the Corps' proposed action.

The Placer County Conservation Program Clean Water Act 404 Permit Strategy includes the following (see appendix C of the Final Environmental Impact Statement/Environmental Impact Report for complete drafts of the proposed permits):

- A Programmatic General Permit founded on the CARP to be implemented via local ordinance, and designed to reduce duplication with that program, for activities with minimal individual and cumulative effects on the aquatic environment;
- A Regional General Permit for minimal impact activities conducted by Placer County Water Agency under the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan;
- A procedure for issuing Letters of Permission for activities with more than minimal but less than significant effects on the human environment, including aquatic resources;
- An abbreviated process for issuing standard permits for other activities consistent with the Placer County Conservation Program that may have a significant impact on the human environment, and require the preparation of an Environmental Impact Statement under the National Environmental Policy Act; and
- A Regional General Permit for minimal impact activities conducted under the Placer

County Conservation Program In-lieu Fee Program.

2.1.3 Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan Overview

The Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan is a multi-species, 50-year plan intended to protect and conserve 14 Covered Species and other biological resources throughout western Placer County. The Conservation Plan aims to provide an effective framework to protect, enhance, and restore the natural resources in specific areas of western Placer County, while streamlining environmental permitting for activities covered by the Plan (Covered Activities). The Conservation Plan is intended to meet the requirements for a habitat conservation plan pursuant to section 10(a)(2)(A) of the Act. To fulfill this purpose, the Plan provides a Conservation Strategy that includes measures to minimize and mitigate the impact of the taking to the maximum extent practicable for the 14 Covered Species in perpetuity, and to meet the State Natural Community Conservation Planning Act by contributing to the conservation of the species within the Plan Area. The Conservation Strategy includes four main components: (1) establishment of a reserve system of interconnected blocks of land (Reserve System); (2) stream protection, enhancement, and avoidance; (3) wetland conservation and no overall net loss of wetland functions and services; and (4) avoidance and minimization measures (see summary in Section 2.3 below, and Chapter 5 of the Plan for details on the Conservation Strategy and Chapter 6 of the Plan for Conditions on Covered Activities including avoidance and minimization measures). If the Service determines the issuance criteria have been met, the incidental take permit will provide take authorization for the Covered Species under the Service's jurisdiction, including species that are not currently listed, if they become listed during the 50-year permit term. If any of the Covered Species are de-listed during the permit term, the Permittees are still required to implement the conservation activities for those species consistent with the obligations in the Plan.

Because many of the Covered Species are associated with aquatic habitats, the Applicants have also developed the CARP (Placer County 2020). The CARP is a Clean Water Act 404 program, integrated with the Plan, for permitting Covered Activities that impact aquatic resources. CARP avoidance, minimization, and mitigation requirements are derived from the Plan's requirements, and the CARP will provide a basis for fulfilling requirements of the federal Clean Water Act and analogous state laws and regulations using the Plan's Conservation Strategy. In conjunction with the CARP, the County has developed an In-Lieu Fee Program, a program under which compensatory mitigation requirements under Section 404 of the Clean Water Act for an individual project or activity can be fulfilled by payment of a fee. The In-lieu Fee Program will provide compensatory mitigation for impacts on aquatic resources for projects and activities that are covered under the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan and the CARP. Measures to avoid and minimize impacts to aquatic resources and compensatory mitigation for impacts to aquatic resources will be consistent between the Conservation Plan, the CARP, and the In-lieu Fee Program. Together, the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan, the CARP, and the In-lieu Fee Program are referred to as the Placer County Conservation Program.

The Permittees are responsible for implementing the Plan and the other elements of the Placer County Conservation Program and will ensure that their own activities and those within their

land use jurisdiction comply with the Plan. The Placer Conservation Authority, a joint powers authority formed for the purposes of implementing the Placer County Conservation Program, will be the “implementing entity” for the Plan and will have primary responsibility for implementing the Plan. The Placer Conservation Authority will fulfill monitoring and reporting responsibilities, and facilitate coordination among the local, state and federal agencies.

2.1.4 Permit Area

The Permit Area is the area in which the Applicants are requesting incidental take authorization of Covered Species. The Permit Area is the same as the Plan Area described in Section 1.2.1 of the Plan. The Permit Area includes 269,118 acres in western Placer County and a small portion of Sutter County; the Permit Area has two main parts, Plan Area A and Plan Area B, as shown on Plan Figure 1-2.

- Plan Area A is the main focus of the Plan, and is where all future growth and most of the Covered Activities will take place. Plan Area A is 209,832 acres and includes the City of Lincoln and all unincorporated lands within western Placer County. Plan Area A is divided into two areas as shown on Plan Figure 1-2: (1) the Valley portion of Plan Area A (Valley), which is comprised of the City of Lincoln and unincorporated western Placer County below 200 feet in elevation where vernal pool grassland complexes and annual grasslands are the primary natural communities; and (2) the Foothills portion of Plan Area A (Foothills), which is comprised of the unincorporated communities along the Interstate 80 (I-80) corridor, the unincorporated Auburn area, and the northern foothills that support most of the woodland communities in the Plan Area.
- Plan Area B is 59,286 acres and includes several specific additional areas (listed below and shown in Plan Figure 1-2) in Placer County and adjacent Sutter County where only specific Covered Activities may occur.
 - B1, Permittee Activity in Non-Participating City Jurisdiction (non-participating cities include Auburn, Loomis, Rocklin, and Roseville whose jurisdiction totals 50,600 acres)
 - B2, Placer County Water Agency Zone 1 Operations and Maintenance (6,315 acres)
 - B3, Raccoon Creek Floodplain Conservation (1,724 acres)
 - B4, Fish Passage Channel Improvement (559 acres and 32.9 miles of channel improvement reaches)
 - B5, Big Gun Conservation Bank (52 acres)

2.1.5 Permit Term

The Applicants are requesting a 50-year permit term. The permit term is the time period in which the Applicants may receive incidental take authorization for Covered Activities under the Plan.

The permit term is also the time in which all conservation actions must be successfully completed to offset the effects of the Covered Activities. The permit term of 50 years was proposed because it would allow for the full and successful implementation of the Plan's Covered Activities, Conservation Strategy, monitoring and adaptive management program, and funding strategy.

2.2 Covered Activities

The projects and activities described herein as Covered Activities may be implemented by the Permittees, applicants under the jurisdiction of the Permittees (third-party projects), or by Special Participating Entities covered through a Certificate of Inclusion (see Section 2.4.15 below). In all cases, approval must be obtained from the Permittee with jurisdiction over a project for its inclusion as a Covered Activity within the Plan. All Covered Activities must incorporate the relevant conditions on Covered Activities described in Chapter 6 of the Plan to avoid and minimize adverse effects to Covered Species and natural communities, and to ensure that progress toward the Plan's Conservation Strategy, described in Chapter 5 of the Plan, is maintained. Part of the approval process for parties seeking coverage under the Conservation Plan is demonstration that the conditions have been incorporated or will be incorporated properly into proposed projects.

For the purposes of the Plan, "activities" are actions that occur repeatedly in one location or throughout the Permit Area, whereas "projects" are well-defined actions that occur once in a discrete location. Together, these activities and projects are referred to as "Covered Activities" for which incidental take authorization is being requested.

Covered Activities are divided into the following seven categories based on geographic boundaries or features and program goals (Plan Figure 2-4):

- Valley Potential Future Growth Area
- Valley Conservation and Rural Development
- Foothills Potential Future Growth Area
- Foothills Conservation and Rural Development
- Regional Public Programs
- In-Stream Programs
- Conservation Programs

The first four categories of Covered Activities encompass future growth and rural development in the Foothills and Valley in Plan Area A. They are defined geographically by mapped boundaries that reflect patterns of anticipated urban and rural-residential expansion (Plan Figure 1-5). The final three categories of Covered Activities occur throughout the Plan Area, and overlap geographically with the other categories. These are defined primarily by similar habitat features (i.e., in-stream programs) or programmatic objectives (i.e., regional public programs and

conservation programs). Each category of activities listed above is summarized below, and more fully described in Sections 2.3.2-2.3.8 of the Plan. Activities or projects that do not fall clearly within the descriptions provided in Chapter 2 of the Plan will be evaluated on a case-by-case basis. Chapter 2 of the Plan also describes categories of activities not covered by the Conservation Plan. For a list of activities not covered by the Plan, see Section 2.7 of the Plan.

As part of the methodology of Plan development, assumed acreage values for Covered Activities were determined based on estimates of land development needed to accommodate anticipated population and employment growth over the 50-year permit term (see Plan Section 2.6, *Categories of Covered Activities* and Appendix M, *Growth Scenario* for details). Table 2-5 of the Plan summarizes the land development estimates by decade for the 50-year permit term for the Plan Area components depicted on Plan Figure 2-4. Estimates include an allowance for associated infrastructure and public facilities in the Plan Area over the 50-year permit term. The estimate for Plan Area B is based on Permittee Activity in Non-participating City Jurisdictions. The other Plan Area B activities are either conservation activities or operations and maintenance on existing facilities that do not have an associated permanent land conversion footprint and are not listed here.

2.2.1 Valley Potential Future Growth Area

This Covered Activity category includes ground- or habitat-disturbing projects and activities in the Valley Potential Future Growth Area (see component A1 in Plan Figure 2-4). The Valley Potential Future Growth Area includes 46,769 acres made up by the City of Lincoln and a portion of the adjacent Lincoln sphere of influence and unincorporated County area adjacent to the City of Roseville. Both public and private activities are included in this category. It includes rural and urban land uses and the use, construction, demolition, rehabilitation, maintenance, and abandonment of typical public facilities, consistent with the implementation of local general plans, community plans, area plans (collectively referred to as general plans); specific plans; and local, state, and federal laws. See Table 2-6 in the Plan for a list of categories and examples of Covered Activities that can be covered in the Valley Potential Future Growth Area.

2.2.2 Valley Conservation and Rural Development Area

This Covered Activity category includes ground- or habitat-disturbing projects and activities that occur in the Valley Conservation and Rural Development Area (see component A2 in Plan Figure 2-4). This 53,929-acre area is an arc of unincorporated County land around the west and north side of the Valley Potential Future Growth Area. Covered Activities here include rural-residential uses and the few types of agriculture-related activities that are subject to approval by the County or City. Covered Activities in the Valley Conservation and Rural Development Area must be consistent with designations in the general plans of the County and the City of Lincoln. The Valley Conservation and Rural Development Area is where most of the Plan's conservation objectives for the Valley will be implemented. See Table 2-7 in the Plan for a list of categories and examples of Covered Activities that can be covered in the Valley Conservation and Rural Development Area. In addition, public agency programs described in Plan Section 2.6.4, *Foothills Conservation and Rural Development* are also Covered Activities in the Valley Conservation and Rural Development Area.

2.2.3 Foothills Potential Future Growth Area

This Covered Activity category includes ground- or habitat-disturbing projects and activities in the Foothills Potential Future Growth Area (see component A3 in Plan Figure 2-4). The 78,897 acres of the Foothills Potential Future Growth Area comprise the I-80 corridor and the communities of Granite Bay, Penryn, Loomis, and Newcastle; the unincorporated area around the city of Auburn; and rural-residential lands east of Rocklin and Lincoln. The Foothills Potential Future Growth Area boundary extends to the Placer/El Dorado county line; hence, area tabulations include 3,820 acres of Folsom Reservoir in which no Covered Activities take place.

Future growth in the Foothills Potential Future Growth Area is expected to be lower in magnitude and density than in the Valley Potential Future Growth Area. There will be portions of the I-80 corridor and the outlying areas around Auburn and along State Route 49 that will develop at urban densities with urban land use. However, most of the Foothills Potential Future Growth Area outside the urban core is zoned for very low-density, rural-residential, and agricultural development. It is expected that most of the land area subject to future growth will be rural residential (i.e., a density of one dwelling unit per acre to one dwelling unit per 10 acres). Acquisition of reserve lands and conservation activities may occur in the Foothills Potential Future Growth Area, primarily in the Stream System (see Plan Section 3.2.7 and Plan Figure 3-8 for a description of the Stream System) to benefit covered fish species. See Table 2-8 in the Plan for a list of categories and examples of Covered Activities that can be covered in the Foothills Potential Future Growth Area.

2.2.4 Foothills Conservation and Rural Development Area

This Covered Activity category includes ground- or habitat-disturbing projects and activities in the Foothills Conservation and Rural Development Area (see component A4 in Figure 2-4). This 30,237-acre area is north of the Foothills Potential Future Growth Area and generally north and east of the intersection of Wise and Gladding Roads; it extends to an area north and west of the intersection of Hubbard and Bell Roads. The Plan Area extends to the Placer/Nevada county line; hence, area tabulations include 837 acres of Camp Far West Reservoir in which no Covered Activities take place.

Most of the area consists of large parcels in woodland and rangeland, and is currently zoned for large-parcel minimums. This category of Covered Activities includes rural-residential uses and those agricultural activities that are subject to approval by the County. The Foothills Conservation and Rural Development Area is where most of the Plan's conservation objectives for the Foothills will be implemented, and Placer Conservation Authority acquisition and management of reserve lands is a Covered Activity.

Covered rural development activities in the Foothills Conservation and Rural Development Area are the same as those listed for the Valley Conservation and Rural Development Area (see Section 2.2.2 above and Table 2-7 in the Plan) and public agency programs (see Table 2-8 in the Plan) are also Covered Activities in the Foothills Conservation and Rural Development Area when they take place there.

2.2.5 Regional General Programs

Regional public programs provide and sustain the backbone infrastructure that supports public services and development within the Plan Area. Regional public programs involve operation and maintenance of existing facilities and construction and operation and maintenance of new facilities. Covered Activities could be carried out by a public agency/utility district, or private developer on behalf of a public agency/utility district.

All regional public programs in the categories described below are Covered Activities in Plan Area A. In Non-participating City Jurisdiction (see component B1 in Plan Figure 2-4) and in Placer County Water Agency Zone 1 operation and maintenance (see component B2 in Plan Figure 2-4) specific programs/activities are Covered Activities as described below.

2.2.5.1 Transportation Programs

Covered transportation program activities provide, enhance, and maintain infrastructure that support existing development and new development. They include transportation program activities in Plan Area A and Permittee activities in Non-participating City Jurisdiction (component B1 in Plan Figure 2-4).

- County and City road projects, including new lanes, new connections, extensions, widening, and realignment projects. Projects may include trails for pedestrian and bicycle use.
- County and City roadway safety and operational improvement projects to roads, including shoulder widening and straightening of curves. Modifications to vertical and horizontal alignments. Improvements at intersections and driveway encroachments, including constructing new turning lanes, adding signals, and lengthening existing turning lanes. Also, intersection level-of-service improvements, grade separations, and sound wall installations. Projects may improve access for pedestrians and cyclists.
- County and City maintenance of new and existing transportation facilities, including appurtenant drainage and water quality infrastructure.
- New roads constructed in association with urban or rural development (usually will be installed by the developer, and the County or City will assume ownership and maintenance).
- Metropolitan Transportation Plan 2035 and subsequent Metropolitan Transportation Plans (projects that are located in the Plan Area and under the jurisdiction of the Permittees).
- Other, yet-undesignated major regional transportation projects.
- Road Maintenance: All routine road maintenance activities by Permittees within Plan Area A and Permittee activities in Non-participating City Jurisdiction are Covered

Activities. Routine road maintenance work means work performed regularly (i.e., every 1 to 5 years) in the Plan Area. The County and City perform routine maintenance work to maintain the functional and structural integrity of their road facilities. Placer County Water Agency will perform routine maintenance on its facilities, including canal maintenance roads and roadway/parking lots associated with its facilities (see Section 2.6.5.1.4 of the Plan).

Certain covered transportation projects/activities are described in more detail in the Plan. See sections of the Plan referenced below for details about design, timing and estimated impacts of the following projects:

- Placer Parkway (South Placer Regional Transportation Authority): A new east–west roadway linking State Route 70/State Route 99 in Sutter County to State Route 65 in Placer County (see Section 2.6.5.1.1 of the Plan).
- I-80/State Route 65 Interchange Improvements (South Placer Regional Transportation Authority): A freeway-to-freeway interchange, which was constructed in 1985 and requires improvement. This is a Permittee activity in Non-participating City Jurisdiction (see Section 2.6.5.1.2 of the Plan).
- City of Lincoln Interchange Improvements: The City of Lincoln anticipates the construction of three interchanges along State Route 65 in Plan Area A, at the realigned Fiddyment Road and State Route 65, Nicolaus Road and State Route 65, and the realigned Wise Road and State Route 65 (See Section 2.6.5.1.3 of the Plan).

2.2.5.2 Wastewater Programs

The County and City of Lincoln operate and maintain multiple wastewater treatment facilities, lift stations, and a network of collection and distribution pipelines for untreated wastewater, treated effluent for disposal, and reclaimed water for irrigation and other municipal purposes. The County is responsible for operation and maintenance of the sewer system in the Community of Sheridan. The County serves areas that include unincorporated portions of North Auburn, Granite Bay, Horseshoe Bar/Folsom Lake, Penryn, Loomis, western Placer County (Dry Creek), Livoti Tract, Sunset Industrial Area, and Sheridan.

The City’s waste management activities are mainly in the established urban area but will be extended to serve new urban growth, including growth in unincorporated areas covered by the Plan. The City will also provide treatment of wastewater for the North Auburn, Bowman, Applegate, Christian Valley, and portions of the unincorporated communities in Meadow Vista through the Mid-Western Placer Regional Sewer Project. The maintenance of this regional pipeline, pump stations, and related infrastructure is considered a Covered Activity.

The Plan will provide coverage for Permittee wastewater projects, including treatment plant construction or expansion (including installation of pipelines), operation and maintenance, effluent discharge, force main and effluent line construction and maintenance, discharge and reclamation line installation, and pump station construction.

Covered wastewater activities by Placer County may occur anywhere within Plan Area A or within Permittee Activity in Non-participating City Jurisdiction (see component B1 in Plan Figure 2-4). The wastewater projects currently planned are listed in Table 2-9A of the Plan.

Additionally, the Plan covers sewer pipeline operation and maintenance to prevent deterioration of infrastructure necessary for wastewater conveyance. The Placer County Environmental Engineering and Utilities Divisions operates and maintains five wastewater treatment facilities, 278 miles of pipe, and 42 lift stations in Placer County. For purposes of this Plan, routine maintenance work is defined as work performed regularly (i.e., every 1 to 5 years) to maintain the functional and structural integrity of facilities.

Maintenance activities will generally require trenching around existing pipelines and conducting repairs or replacing segments of pipeline. The pipelines are located in both urban and rural areas. For a list of the maintenance activities that are proposed for coverage under the Plan, see Section 2.6.5.2.1 of the Plan.

2.2.5.3 Water Supply Programs

Placer County Water Agency, the City of Lincoln, and Placer County (for the Sheridan community) will supply present and future water users in the Plan Area and portions of the non-participating cities as described in the sections below. The Conservation Plan covers the collection and conveyance of raw water from surface and groundwater sources to treatment plants or directly to consumers. In most cases, distribution of treated water does not require incidental take coverage. Two raw water suppliers in Placer County – Nevada Irrigation District and the South Sutter Irrigation District – are not Permittees but could apply for take coverage from the Placer Conservation Authority as a Participating Special Entity (see Section 2.4.15 below and Plan Section 8.9.4, *Take Authorization for Participating Covered Activities*).

2.2.5.4 Placer County Water Agency

Placer County Water Agency Covered Activities include operation and maintenance of its raw water distribution system, future capital improvement projects within the Plan Area, and future construction of Placer County Water Agency water supply facilities (e.g., new water supply, treatment and delivery infrastructure, operation and maintenance of new water supply, treatment, and delivery infrastructure). Covered Placer County Water Agency water supply activities may occur anywhere within Plan Area A and as a Permittee Activity in Non-participating City Jurisdiction (see component B1 of Plan Figure 2-4). Placer County Water Agency operation and maintenance of existing facilities is covered in Placer County Water Agency Zone 1 operation and maintenance (see component B2 in Plan Figure 2-4).

Placer County Water Agency planned capital projects for new surface and groundwater supply, treatment, storage, and delivery infrastructure over the term of the Plan are described in Table 2-9B of the Plan. These will include water supply projects, groundwater wells, transmission and distribution pipelines, metering station installations, water treatment and storage facilities, corporation yards, facilities and administration buildings, and pump stations. The largest of the

capital improvement projects would be the West Placer water supply projects. This includes the construction of water supply infrastructure components, including new or expanded diversions from the Sacramento and American Rivers, and new or expanded water treatment and pumping facilities, storage tanks, and major transmission and distribution pipelines.

The direct effects of operating the existing West Placer water supply projects are covered by existing biological opinions where necessary and therefore are not a Covered Activity of this Plan and are not assessed in this Biological Opinion. However, development projects and their associated water supply infrastructure within the Plan Area that will connect to existing water supply infrastructure are Covered Activities. Therefore, the growth-inducing effects in the Plan Area associated with expansion of the West Placer water supply projects are covered by the Plan.

Placer County Water Agency Covered Activities are described in Section 2.6.3.1 of the Plan, and more details about Placer County Water Agency maintenance are described in Plan Appendix E, *Placer County Water Agency Resource Management Plan*. Generally, Placer County Water Agency uses a variety of canals, pipelines, and other infrastructure to distribute water to its customers throughout Placer County. The majority of Placer County Water Agency's raw water distribution is facilitated by gravity flow through the canal system. Reservoirs provide flexibility in operations, allowing capture and storage of flow from portions of the upper system for release, as needed, to portions of the lower system.

Placer County Water Agency performs scheduled maintenance in the canal system as needed and cleans canals on an annual basis. Maintenance activities associated with canals include clearing debris and sediment, lining leaky canal sections, repairing damaged pipes and/or flumes, and controlling vegetative growth in the canals and on the canal berms. Incidental take from the use of pesticides, including herbicides and rodenticides, is not a Covered Activity. Other maintenance projects performed on an infrequent basis by Placer County Water Agency include sediment removal from reservoirs and dams as well as reservoir and canal berm maintenance related to damage by muskrats, beavers, and otters.

Additionally, the following are Placer County Water Agency operation and maintenance Covered Activities:

- Adjusting or replacing orifices at delivery points.
- Yearly water delivery outages.
- Delivery schedule changes and routine flow adjustments throughout the canal system through use of check boards, temporary weirs, valve controls, and debris removal.
- Seasonal release of excess water at designated outlet locations for flood management during storm events.

2.2.5.5 Sheridan Public Water System

Operation and maintenance of Sheridan’s public water system, construction of a raw water transmission pipeline and related infrastructure, and the diversion of water will be Covered Activities. Sheridan’s water system consists of four public water wells (three for drinking water and one for fire protection), an 180,000-gallon storage tank, and a series of 4- and 6-inch distribution pipelines. As the Sheridan community grows, it may be necessary to construct a raw water transmission pipeline from either Bear River or Raccoon Creek to provide surface water for the Nader Road and Sheridan areas. The necessary capacity and resultant diversion from either of these surface water bodies will depend on the feasibility and need of the community in the Plan Area.

2.2.5.6 City of Lincoln Water System

The City of Lincoln has partnered with Nevada Irrigation District to develop a water supply system for provisioning treated water to future customers within the City of Lincoln General Plan boundaries and the Nevada Irrigation District service district. The source of water for the proposed project is Lake Combie, with a pipeline proposed to connect at the Combie-Ophir turnout and carry raw water west to a reservoir and treatment plant to be located in the western portion of the Nevada Irrigation District service district. Covered Activities associated with this project include construction of approximately 16.3 miles of pipeline, raw water storage, and a water treatment plant as well as ongoing operation and maintenance of those facilities in Plan Area A.

2.2.5.7 Solid Waste Management Facility Programs

Solid waste management facility programs include operation and maintenance and expansion of existing facilities, and construction of new facilities. Covered solid waste management facility program activities may occur anywhere within Plan Area A, and transfer stations built or operated by the County are Covered Activities in Non-participating City Jurisdiction (see component B1 of Plan Figure 2-4).

Post-closure maintenance activities and the future property use as open space, which may include public recreation (i.e., trails), agriculture, grazing, or other activities compatible with post-closure conditions that might be constructed in the future are also Covered Activities. Solid waste management projects listed in Table 2-9C of the Plan are expected to occur within the permit term of the Plan.

2.2.5.8 Western Regional Sanitary Landfill

A variety of Covered Activities could take place on the existing Western Regional Sanitary Landfill facility property or on either of two adjacent properties as a result of expansion. The current landfill is expected to operate through 2058, and landfill expansion onto adjacent properties is anticipated to take place during the permit term. Covered Activities might include siting a new landfill; producing energy through landfill gasification, pyrolysis, anaerobic

digestion, or other waste-conversion technology; relocating the compost facility or recycling centers or other drop-off facilities; developing a solar array for on-site electricity demands; creating an alternative fuel and/or electric vehicle fueling station; providing pipeline compressed landfill gas/natural gas to third-party end users in and/or adjacent to the Sunset Industrial Area; or establishing a rail spur to establish off-site transport of recyclables and household hazardous waste. For more details about these activities and their location, see Section 2.6.5.4.1 of the Plan.

2.2.5.9 Materials Recovery Facility

Ongoing operations, relocation, or construction of a new Materials Recovery Facility is a Covered Activity. The existing Materials Recovery Facility is an integral part of the landfill operation. It is an enclosed, warehouse-style facility where municipal solid waste is accepted and sorted into recyclables and waste that will be buried. For more details about this Covered Activity, see Section 2.6.5.4.2 of the Plan.

2.2.5.10 The Loomis Landfill

The closed Loomis Landfill, owned and operated by Placer County Department of Public Works, is an unlined Class III landfill. Covered Activities at the landfill include implementation of the Loomis Closure Plan, adopted in 1996, that describes corrective actions, final closure, and post-closure maintenance activities (see Plan Section 2.6.5.4, *Solid Waste Management Facility Programs* for details). The minimum 30-year post-closure maintenance period will extend through 2028. The closure plan describes the post-closure land use of the site to be consistent with the surrounding terrain, land uses, and zoning. The site is planned to be maintained as open space, most likely as annual grassland, and may allow for recreation activities.

2.2.5.11 Public Recreation-serving Activities

The establishment and maintenance of public recreation facilities by Plan Permittees are Covered Activities, although public use of the facilities is not. Covered Activities include construction of new parks, adaptation of existing public lands for enhanced recreational access, and operation and maintenance of these facilities. Many County and most City of Lincoln parks and trail facilities will be within, or close to, urban areas. Covered public parks and recreation-serving activities may occur anywhere within Plan Area A.

2.2.5.12 New Parks

Covered Activities in County and City of Lincoln parks will include construction of trails, recreation facilities, and other park infrastructure, including restrooms, parking areas, maintenance facilities, restrooms, wildlife observation platform facilities, and educational kiosks. To the extent possible, recreational facilities will utilize existing infrastructure such as existing trails and fire or ranch roads.

The Auburn/Bowman, Dry Creek/West Placer, Granite Bay, and Horseshoe Bar/Penryn Community Plans, the Dry Creek Greenway Vision Plan, and the Placer County Regional

Bikeway Plans propose trail networks that will be constructed over time. As each of these plans and the Placer County General Plan are updated, trail alignments will be modified as conditions warrant. The existing Placer County Fairgrounds within the city of Roseville may relocate within western Placer County.

2.2.5.13 Park and Trail Maintenance

County and City of Lincoln maintenance and management of park and open space areas in the Plan Area are Covered Activities. This includes trail and road maintenance, installation of fencing, facility maintenance, prescribed burns, pond maintenance (including draining and dredging), and invasive vegetation management. Vegetation management activities include the removal of exotic species, planting of native vegetation, and livestock grazing. Trail maintenance includes grading, clearing, brushing, erosion control, paving, re-paving, and trail restoration. If a park is to be included as part of the Plan's Reserve System, details for maintenance will be provided within a Reserve Management Plan (see Plan Section 5.3.2.1, *Reserve Management Plans*).

2.2.5.14 Hidden Falls Regional Park

Hidden Falls Regional Park (Hidden Falls) is a 1,200-acre park located between north Auburn and the City of Lincoln. Expansion of park facilities will be included as a Covered Activity under the Plan (e.g., additional roads, trails, staging and parking area, maintenance and caretaker buildings, and a nature/education center). Trail connections to Placer Land Trust and Bear Yuba Land Trust properties are anticipated and will also be covered. The public's use of the parks is not a Covered Activity.

Hidden Falls currently features natural surface trails suitable for hiking, running, biking, and horseback riding. Other park amenities include a paved access road, 50-space paved parking lot, equestrian staging area, utilities, restrooms, a 60-foot emergency-access bridge over Deadman Creek, and a similar bridge over Raccoon Creek.

2.2.5.15 Utility Line Construction and Facility Maintenance

Utility line construction and maintenance activities that are directly subject to the authority of a Permittee are Covered Activities within Plan Area A. Numerous pipelines and cables in the Plan Area are maintained by the Permittees or by public or private utilities, natural gas companies, petroleum companies, or telecommunications companies acting under Permittee authority, including franchise and encroachment within Permittee-owned roadway or other rights-of-way. These private companies also operate and maintain electric substations, gas valve stations, radio broadcasting towers, and cellular telephone towers, among other facilities.

A utility that is not directly subject to the authority of a Permittee may request coverage under the Plan for routine maintenance and repair of existing utilities within Plan Area A as a Participating Special Entity (see Plan Section 8.9.4, *Take Authorization for Participating Special Entities*). However, public and private utility activities that are regulated by or subject to the

authority of another entity such as the California Public Utilities Commission are not covered by the Plan.

Maintenance or repair of linear facilities may involve vegetation clearing (e.g., mowing, disking, tree trimming) or excavation of underground utility lines for inspection, maintenance, or replacement. These are all Covered Activities under the Plan; the use of pesticides are not. Requests for coverage for utility line or facility maintenance activities that take place in the Plan's Reserve System will be decided on a case-by-case basis and the Permittee may need to consult with state and federal regulatory agencies as needed.

2.2.5.16 In-Stream Activities

This category of Covered Activity includes operation and maintenance activities in the stream channel, along the streambank, and on adjacent lands at top-of-bank within the riparian corridor. This category addresses projects that occur within streams (typically the top of the bank or the outer edge of the riparian canopy, whichever is more landward) and may result in effects on a stream, reservoir, or on-stream ponds. Covered in-stream activities may occur anywhere within Plan Area A.

In-stream activities that are covered under this Plan include the following:

- Urban and rural development and public program activities described above that overlap with the Stream System and the adjacent riparian corridor, including transportation, water supply, wastewater management, and stormwater management.
- Bridge construction, replacement, and repair, including vehicular, train, and pedestrian bridges (for details about these activities and their location, see Section 2.6.6.1 of the Plan).
- Flood control and stormwater management, including water retention/detention facilities construction, streambed and channel debris and vegetative control and removal, channel lining of canals, canal realignment, culvert replacement, maintenance of access roads, beaver dam removal, stormwater conveyance facilities and outfall structures, erosion/sediment control, bank stabilization, and floodplain enhancement (for details about these activities and their location, see Plan Section 2.6.6.2, *Flood Protection Projects* and for a list of planned projects see Table 2-9D in the Plan).
- Maintenance of existing flood protection and stormwater facilities such as drainage improvements, existing dams, armored creeks, bypass channels, and stormwater ponds. Maintenance includes trail repair, trash removal, installation of fences, accumulated sediment removal (primarily in reservoirs), road, culvert, and minor bridge repair.
- Natural resource protection such as bank stabilization projects, restoration to reduce erosion, and fish passage enhancements.

- Erosion control projects or storm damage prevention projects that do not create new permanent structures or hardscape on the creek bank or channel. This category includes temporary flood-fighting activities to prevent storm damage (e.g., temporary flood fighting would include sandbagging and earth-fill levees).
- Vegetation management for exotic species removal and native vegetation plantings, including the use of livestock grazing and prescribed burns.
- Reservoir fluctuations including drawdown and filling for maintenance or operational purposes (i.e., not associated with a capital project).
- In-stream gauge station monitoring (installation and maintenance).
- Operation and maintenance of water system facilities that are located in-stream.
- Implementation of Resource Management Plans.
- Water utility/water supply operation and maintenance activities associated with habitat enhancement and restoration that will be conducted inside and outside the Reserve System (see Plan Section 2.6.7, *Conservation Programs*).
- Implementation of the Riverine and Riparian Conservation and Management Strategies (see Plan Chapter 5, *Conservation Strategy*), including cleaning/removing sediment from gravel beds and augmenting gravel to streambeds, among other in-stream conservation activities.

2.2.6 Conservation Program

This category of Covered Activity includes activities associated with implementing the Plan's Conservation Strategy. Most of these activities will take place within the Reserve System, but some, such as in-stream conservation measures, may occur outside of the Reserve System.

Conservation actions that are covered under this Plan include the following:

- Habitat management, enhancement, restoration, and creation and translocation of Covered Species consistent with the requirements of the Plan (see Plan Section 2.6.7.1.1, *Habitat Enhancement, Restoration, Creation, Translocation, and Reserve Management* for a list of activities in this category). Habitat management activities include vegetation management (i.e., grazing, invasive plant control, prescribed burning, etc.) consistent with the Plan. Use of pesticides for vegetation control or control of invasive species is not a Covered Activity.
- Research and monitoring of Covered Species, natural communities, and other resources within the Reserve System (See Plan Section 2.6.7.1.2, *Monitoring and Research*). These activities may require surveys for Covered Species that could disturb or capture Covered Species. Surveys for Covered Species will also be conducted on private land being considered for acquisition for the Plan. Research conducted in support of Plan implementation is covered as long as it has negligible

effects on populations of Covered Species, but research unrelated to Plan implementation is not covered.

- Fuel Management (see Plan Section 2.6.7.1.3, *Fuel Management*). The Reserve Management Plan (see Plan Section 5.3.2.1, *Reserve Management Plans*) for each unit of the Reserve System will have a fire management component that describes actions that will be taken to manage fuel loads. These actions will be Covered Activities under the Plan.
- Recreation (see Plan Section 2.6.7.1.4, *Recreation*). The development of recreational facilities within the Reserve System that meet the requirements in the Plan and that don't exceed the limits set by the Plan (see Plan Section 5.3.2.2.1, *Content of Reserve Unit Management Plans*, and Chapter 6, *Program Participation and Conditions on Covered Activities*, Reserve Management Conditions 1 through 3) will be Covered Activities. Recreational uses will only be allowed within the Reserve System if the Placer Conservation Authority determines that they are consistent with the biological goals and objectives of the Plan and are consistent with a reserve unit management plan approved by the Wildlife Agencies.
- Reserve System Infrastructure (see Plan Section 2.6.7.1.5, *Reserve System Infrastructure*) includes construction, maintenance, and use of facilities needed to manage the Reserve System. This could include maintenance of facilities such as roads, bridges, gates, maintenance yards, etc., conducted in compliance with the guidelines in Plan Chapter 5, *Conservation Strategy*, Plan Section 5.3.2.1, *Reserve Management Plans*, and conditions on Covered Activities described in Plan Chapter 6, *Program Participation and Conditions on Covered Activities*.
- Emergency Activities (see Plan Section 2.6.7.1.6, *Emergency Activities*). Emergency activities within the Reserve System include a variety of actions that may be implemented by the Permittees in response to disasters, national defense, casualties, or other security issues. Responses to changed circumstances within Reserve System lands that may affect populations of Covered Species are covered under this Plan.
- Placer County Conservation Program in-stream conservation activities (see Plan Section 2.6.7.2, *Placer County Conservation Program In-Stream Conservation Activities*). Conservation actions to improve in-stream systems may occur anywhere in either Plan Area A or B, and may occur either on public or private land. Specific Covered Activities performed to enhance and improve stream systems in the Plan Areas are described in the following sections.
- Stream barrier modification projects (see Plan Section 2.6.7.2.1, *Stream Barrier Modification Projects*). Dams and other in-stream barriers will be removed to improve fish passage into and within the Plan Area. There are several barriers to fish passage proposed for removal in the Plan. Some of the barriers proposed for removal are on private land and not under the control of the Permittees. If the Permittees do not have permission to remove the structures identified in Plan Section 2.6.7.2.1, then they will propose other structures for removal to the Wildlife Agencies.

- In-channel habitat improvement (see Plan Section 2.6.7.2.2, *In-Channel Habitat Improvement*). When opportunities exist, the Placer Conservation Authority will remove or modify in-channel features within and outside of the Reserve System to restore in-stream habitat in addition to the stream barrier removal described above. Potential restoration measures include removal of features such as riprap, dikes, and levees; the setting back and/or stabilization of creek banks; and the re-establishment of historical stream morphology. Additional activities include vegetation management and restoration, invasive species control, gravel augmentation and cleaning, and bank restoration and stabilization.
- Riparian restoration (see Plan Section 2.6.7.2.3, *Riparian Restoration*). The Placer Conservation Authority will restore 330 acres of riparian habitat, regardless of impacts, and up to an additional 876 acres if the maximum 375 acres of riparian land cover is converted. The restored riparian habitat will connect and expand existing riparian habitat. Restored riparian habitat will improve habitat quality for Covered Species, slow floodwaters, improve sediment deposition and bank formation, and reduce sediment loads streams.

2.2.7 Other Placer County Conservation Programs

Placer County administers ongoing conservation and resource management programs that are separate from, but complementary to, the Placer County Conservation Program.

Environmental effects of these programs are covered by the Plan. The actions conducted by Placer County to implement the Placer Legacy Program, the Auburn Ravine/Raccoon Creek Ecosystem Restoration Program (Ecosystem Restoration Program), Dry Creek Coordinated Resource Management Plan (Coordinated Resource Management Plan), Pleasant Grove/Curry Creek Ecosystem Management Plan, and Dry Creek Greenway Vision Plan are similar to many of those that will be conducted by the Placer Conservation Authority to implement the Placer County Conservation Program conservation strategy (see Plan Section 2.4, *Permittees, Plans, Policies, and Programs*, for a description of Coordinated Resource Management Plans). These actions will occur primarily outside the Reserve System.

- Placer Legacy Program and Resource Management Plans (see Plan Section 2.6.7.3.1, *Placer Legacy Program and Resource Management Plans*). The Placer Legacy Program focuses on land preservation, stewardship programs, public education, and restoration and enhancement to meet the project goals and objectives. Conservation of agricultural lands occurs through fee title acquisition, conservation easements, and Williamson Act agreements. These actions complement the implementation of the biological goals and objectives of the Placer County Conservation Program. However, the Placer Legacy Program's restoration and enhancement actions will have environmental effects that are covered by the Plan. The Placer Legacy Program may also carry out activities such as creation of recreational trails and interpretive centers. These would also be Covered Activities as described in Section 2.2.5.13 above.
- Community Wildfire Protection Plan (see Plan Section 2.6.7.3.3, *Community Wildfire Protection Plan*). In 2012, Placer County undertook a regional planning effort to

identify areas at risk of wildfire, and to develop management strategies for communities. The Community Wildfire Protection Plan defines specific fire hazards in designated areas, assesses the communities at risk, and identifies and prioritizes specific projects to protect local communities. Any fuel management activities, which include the creation of firebreaks, and fuel treatment and restoration, conducted by the County on private or public lands would be considered a Covered Activity (private landowners clearing fuel on their own property is not covered).

- Resource Management Plans (see Plan Section 2.6.7.3.4, *Resource Management Plans*). The Plan integrates with three previously developed watershed management plans (the Dry Creek Coordinated Resource Management Plan, the Auburn Ravine/Markham Ravine/Raccoon Creek Ecosystem Management Plan, and the Pleasant Grove/Curry Creek Ecosystem Management Plan). These management plans were developed cooperatively with several different special-interest groups to address pollution, manage storm water, and restore and enhance Stream System habitats and surrounding uplands. The Placer Conservation Authority will use these restoration and resource management plans to help guide stream and riparian acquisition, enhancement, and restoration actions. Construction or restoration activities associated with implementation of these watershed management plans may have temporary effects, but overall these projects will provide a net benefit to Covered Species and natural and semi-natural communities by improving ecosystem integrity, resiliency, and connectivity.

2.3 Conservation Strategy

The Plan's Conservation Strategy is fully described in Chapter 5 of the Plan. The Conservation Strategy will mitigate the impacts on Covered Species and their habitats, as well as contribute to the recovery of the Covered Species, as required pursuant to the State Natural Community Conservation Planning Act. The Conservation Strategy is based on landscape-level, natural community-level, and species-level biological goals and objectives (described in Section 5.2 of the Plan, and summarized below in Section 2.3.1), and on conservation measures that will be implemented to achieve the biological goals and objectives (described in Section 5.3 of the Plan and summarized below in Section 2.3.1).

The Plan's Conservation Strategy includes four main components: (1) establishment of a reserve system of interconnected blocks of land (Reserve System); (2) stream protection, enhancement, and avoidance; (3) wetland conservation and no overall net loss of wetland functions and services; and (4) avoidance and minimization measures.

2.3.1 Reserve System

By the end of the 50-year permit term, an approximately 47,300-acre Reserve System will be established within the Plan Area (33,395 acres of which are for mitigation and 13,905 acres of which are attributable to conservation commitments related to the Natural Community Conservation Planning Act); see Plan Table 5-3 for acreages of natural communities and constituent habitats that will be preserved in the Reserve System. In addition, within the Reserve System the Placer Conservation Authority will restore at least 4,375 acres of natural

communities regardless of the amount of impacts from Covered Activities (independent of effects) to fulfill Natural Community Conservation Planning Act conservation commitments, and, because additional restoration of habitat will be implemented to mitigate for impacts from Covered Activities at certain ratios (dependent on effects), will restore up to 6,220 acres of natural communities if all allowable loss proposed under the Plan occurs (see Plan Table 5-4). These protected and restored lands will augment the approximately 16,000 acres of existing reserves and other protected areas in the Plan Area (see Plan Section 5.3.1.3.5, *The Role of Existing Protected Areas in the Conservation Strategy*). Cumulatively, 38 percent of the present natural and semi-natural landscape in Plan Area A would ultimately be subject to conservation management.

In order to minimize the effects of habitat fragmentation and to preserve habitat connectivity within the Plan Area, the Reserve System will mainly be located in the western and northern Valley and in the northern Foothills, away from future urban and suburban growth. In addition, the Reserve System will be distributed across the Plan Area in order to link and provide spatial diversity of protected communities. See Plan Section 5.3.1.3.2, *Conservation Zones* for a description of the five conservation zones considered in the Plan; the main geographical considerations are (1) division between Valley and Foothills, (2) division between North and South, (3) location of the Stream System drawn around Plan Area watercourses, and (4) the designation of the Reserve Acquisition Area. The resulting five Conservation Zones are Valley North Conservation Zone, Valley South Conservation Zone, Valley Potential Future Growth Area, Foothills North Conservation Zone, Foothills Potential Future Growth Area (See Plan Figure 5-1).

Table 5-3 of the Plan shows acreages to be protected within each Conservation Zone; note that there are flexible and non-flexible protection commitments and therefore the acreage ultimately preserved may differ from the estimates for respective conservation zones shown in Plan Table 5-3 as long as corresponding non-flexible protection commitments are achieved. Conservation that will occur in each of the conservation zones is summarized below.

Habitat protection in the Valley North Conservation Zone will include a minimum of 8,430 acres of vernal pool complex and include the majority of Valley aquatic/wetland complex in the Reserve System. Reserves in this zone will contribute to linkages with the Foothills along the Bear River and Raccoon Creek, maintain connectivity between the Valley North and Valley South conservation zones, and protect linkages along lower Raccoon Creek in Sutter County.

Habitat protection in the Valley South Conservation Zone will include a minimum 5,170 acres of vernal pool complex, and will most likely be the largest source of rice land acquisition. Reserves in Valley South will contribute to linkages along Auburn Ravine and Markham Ravine and between Pleasant Grove Creek and Curry Creek watersheds.

Up to 2,000 acres of the Reserve System may be located within the Potential Future Growth Area. The Valley Potential Future Growth Area includes approximately 2,350 acres of natural communities mapped in the Stream System as well as several thousand acres of vernal pool complex that are suitable for inclusion in the Reserve System along the western edge of the Valley Potential Future Growth Area, adjacent to the Reserve Acquisition Area.

The Foothills North Conservation Zone encompasses the entire Foothills Reserve Acquisition Area. At least 85 percent of protection of communities within the Foothills will occur in the Foothills North Conservation Zone, primarily for protection of oak woodland and the Bear River and Raccoon Creek stream systems. Habitat protection within the Foothills Potential Future Growth Area will include lands along Auburn Ravine and in the upper Doty Creek and Dry Creek watersheds and will provide east-west connectivity from the Foothills to the Valley.

2.3.2 Stream Protection, Enhancement, and Avoidance

The Conservation Strategy will provide for the protection of the Stream System throughout Plan Area A, and in-stream enhancement actions will occur inside and outside of the Reserve System in Plan Areas A and B. The Stream System will contribute both to Covered Species' habitats and connectivity in the Reserve System.

2.3.3 Wetland Conservation and No Overall Net Loss of Wetland Functions and Services

The Conservation Strategy will provide for no overall net loss of wetland functions by protecting, enhancing, restoring and creating wetlands through implementation of the conservation measures for the vernal pool complex, riverine/riparian complex, and aquatic/wetland complex natural communities. The Conservation Strategy provides for the protection of surrounding upland necessary to sustain the hydrological function of protected, restored, and created wetlands.

2.3.4 Avoidance and Minimization

Covered Activities will avoid and minimize take by complying with general conditions that will apply to all Covered Activities, and specific conditions that apply to certain communities and species. The conditions are summarized in Section 2.3.6 below and described in full in Chapter 6, *Program Participation and Conditions on Covered Activities* of the Plan. Implementation of the Conservation Strategy will accomplish avoidance and minimization on a cumulative regional scale, while avoidance and minimization in the Potential Future Growth Areas will be focused only on specific resources.

2.3.5 Biological Goals and Objectives and Conservation Measures

The Plan's Conservation Strategy is designed to achieve biological goals and objectives through the implementation of conservation measures. The hierarchal framework for Plan goals, objectives, and conservation measures is as follows:

- Goals are future desired states based on the conservation needs of Covered Species and natural communities.
- Objectives are measurable achievements or results that support the completion of a goal. They may include quantitative commitments, such as an amount of land to be protected and restored. They clearly state a desired result and will collectively achieve the biological goals.

- Conservation measures are implementable measures designed to achieve the biological goals and objectives. For the Plan, they consist of four broad conservation measures (See Section 5.3 of the Plan).

Biological goals are addressed at three levels:

- **Landscape.** Landscape-level conservation aims to acquire and manage large interconnected blocks of land in which optimal conditions for ecological sustainability can be maintained, including hydrologic function and land-cover diversity, while minimizing land use incompatibility (see Section 5.2.5 of the Plan for landscape-level goals and objectives and a rationale for each).
- **Community.** This level of conservation addresses natural and semi-natural communities primarily through the protection, management, enhancement, restoration, and creation of community types, particularly as habitat for Covered Species. The Reserve System will encompass viable units of the various natural and semi-natural communities (see Section 5.2.6 of the Plan for goals and objectives for natural communities and a rationale for each).
- **Species.** Covered Species may need protection for individuals and enhancement of populations and groups of populations. These needs may not be fully addressed at the landscape or community level and thus species-level goals, objectives, and conservation measures are also developed for some Covered Species (see Section 5.2.7 of the Plan for goals and objectives for Covered Species and a rationale for each).

Plan Section 5.3, *Conservation Measures*, describes the conservation measures the Placer Conservation Authority will implement to achieve the biological goals and objectives.

Plan Section 5.3.1, *Conservation Measure 1: Establish Reserve System*, describes the Plan's requirements for Reserve System assembly, including reserve design criteria and acre commitments for natural and semi-natural communities and Covered Species' habitats. This conservation measure includes the following:

- Section 5.3.1.2, *Tracking Progress toward Reserve System Assembly*, describes the Plan's commitment to track Reserve System assembly and ensure that conservation stays ahead of loss.
- Section 5.3.1.3, *Reserve System Components*, describes the roles of the Reserve Acquisition Area, the Reserve System in relation to the Reserve Acquisition Area, the Stream System, buffer zones, Plan Area B, and existing conservation lands that will contribute to the Reserve System.
- Section 5.3.1.4, *Landscape-level Reserve Design*, describes the acquisition-related conservation measures for meeting landscape-level biological goals and objectives.

- Section 5.3.1.5, *Natural Community–level Reserve Design*, describes acquisition requirements for meeting natural community–level biological goals and objectives. This includes guidance for acquisition needed to protect and restore/create natural communities.
- Section 5.3.1.6, *Species-level Reserve Design*, describes additional acquisition requirements for meeting species-level biological goals and objectives. This includes guidance for acquisition needed to protect and restore/create natural communities.

Plan Section 5.3.2, *Conservation Measure 2: Manage and Enhance the Reserve System*, describes the actions necessary to maintain and improve the ecological conditions of natural and semi-natural communities, Covered Species’ habitat on the Reserve System, and along streams outside the Reserve System. This conservation measure includes the following:

- Plan Section 5.3.2.1, *Reserve Unit Management Plans*, describes the process for development of reserve management plans and the required contents of management plans.
- Plan Section 5.3.2.2, *Landscape-level Management and Enhancement*, describes management and enhancement actions to be implemented at the landscape level, such as increasing permeability in the Reserve System.
- Plan Section 5.3.2.3, *Natural Community–level Management and Enhancement*, describes management and enhancement requirements and techniques for each natural community.
- Plan Section 5.3.2.4, *Species-level Management and Enhancement Measures*, describes management and enhancement to meet Covered Species’ needs that are not met through landscape- or natural community-specific measures.

Plan Section 5.3.3, *Conservation Measure 3: Restore and Create Natural Communities and Covered Species’ Habitat*, describes restoration and creation actions the Placer Conservation Authority will implement to increase the acres of natural communities and Covered Species’ habitat¹. This conservation measure includes the following:

- Plan Section 5.3.3.2, *Timing of Restoration*, describes the timing of restoration/creation of habitat and establishes milestones for restoration/creation of natural community types and constituent habitat.
- Plan Section 5.3.3.2.1, *Site-level Restoration Plans*, describes requirements for restoration plans developed for individual restoration sites.

¹ Restoration or creation as defined under the Plan will increase the area of the natural community or Covered Species’ habitat. Thus, the definition of restoration in the Plan differs somewhat from the definition used by the Corps (U.S. Army Corps of Engineers 2008), in that the Corps definition of restoration includes both *establishment* and *rehabilitation*. Under the Corps definition, rehabilitation does not involve an increase in aquatic resource area.

- Plan Section 5.3.3, *Natural Community-level Restoration/Creation*, describes specific restoration/creation methods, timing and other requirements (i.e., success criteria) for vernal pool and grassland, aquatic/wetland complex, riverine/riparian complex, and oak woodland natural communities, as well as species-specific restoration actions.

Plan Section 5.3.4, *Conservation Measure 4: Plan Area-wide Actions*, describes conservation measures that the Placer Conservation Authority will implement throughout Plan Area A, including outside the Reserve System. This conservation measure includes:

- Plan Section 5.3.4.1, *Landscape-level Plan Area-wide Actions*, describes Low Impact Development Standards that will be established and implemented in the Plan Area.
- Plan Section 5.3.4.2, *Natural Community-level Plan Area-wide Actions*, describes Plan-wide actions that will be taken for specific natural communities.

Table 5-8 of the Plan summarizes the Plan’s biological goals and objectives and applicable conservation measures (see Plan Table 5-1 for acronyms used in Table 5-8). For a full account of the biological goals and objectives as well as the rationale for each objective, refer to Section 5.2 of the Plan. Conservation measures in Section 5.3 of the Plan describe how the biological goals and objectives will be met.

2.3.6 Conditions on Covered Activities

The Conditions on Covered Activities in Chapter 6 of the Plan describe measures that will apply to Covered Activities to achieve regional and site-specific avoidance, minimization, and mitigation of effects on natural communities and Covered Species. Not all conditions will apply to all activities. The process for determining which conditions apply is described in Plan Section 6.2, *Program Participation: Receiving Take Authorization under the Plan*.

2.3.6.1 General Conditions

The Plan includes five General Conditions that apply to all categories of Covered Activities. They are:

- *General Condition 1, Watershed Hydrology and Water Quality* describes conditions that will be implemented to minimize impacts to hydrology and water quality. See Plan Section 6.3.1.1 for a complete description of this Condition.
- *General Condition 2, Conservation Lands: Development Interface Design Requirements* describes design requirements for Covered Activities that occur in or adjacent to the Reserve System, existing reserves, mitigation sites or conservation banks. See Plan Section 6.3.1.2 for a complete description of this Condition.
- *General Condition 3, Land Conversion* describes the payment of fees and the tracking of impacts against take limits that will apply to Covered Activities that result in the permanent conversion of natural land cover. See Plan Section 6.3.1.3 for a complete description of this Condition.

- *General Condition 4, Temporary Effects* describes the payment of temporary effects fees and tracking of impacts against take limits that will apply to Covered Activities that result in temporary effects to natural land cover. It also describes standards that must be met in order to qualify as a temporary effect. See Plan Section 6.3.1.4 for a complete description of this Condition.
- *General Condition 5, Conduct Worker Training* describes training that will be provided to construction personnel about avoidance and minimization measures that must be applied during construction. See Plan Section 6.3.1.5 for a complete description of this Condition.

2.3.6.2 Natural Community Conditions

Based on their biological sensitivity and/or regulatory status, Covered Activities in the following natural communities have additional (i.e., in addition to the General Conditions described above) specific avoidance, minimization and mitigation requirements: vernal pool complex, aquatic/wetland complex, riverine/riparian complex, and valley oak woodland. Mitigation for take of these natural communities will involve off-site restoration overseen by the Placer Conservation Authority (funded through payment of special habitat fees; see Plan Chapter 9, *Costs and Funding*).

- *Community Condition 1, Wetland Avoidance and Minimization (Vernal Pool and Aquatic/Wetland Complex)* describes how avoidance of constituent habitat within the vernal pool complex and aquatic/wetland complex communities will be determined. It also describes how effects on aquatic/wetland complex constituent habitat that cannot be avoided will be minimized and, in cases where permanent effects on vernal pool constituent habitat occur, the process for allowing the Placer Conservation Authority to salvage vernal pool inoculum. See Plan Section 6.3.2.1 for a complete description of this Condition.
- *Community Condition 2, Riverine and Riparian Avoidance and Minimization* describes habitat avoidance and minimization focused specifically on the riverine and riparian complex community. This condition includes design requirements and construction Best Management Practices for Covered Activities in the Stream System, identifies Best Management Practices specific to Placer County Water Agency operations and maintenance activities, and describes habitat restoration required for impacts to riverine or riparian habitat. See Plan Section 6.3.2.2 for a complete description of this Condition. Note that this condition is in addition to *Stream System Condition 1, Stream System Avoidance and Minimization* described below and in Plan Section 6.3.3.
- *Community Condition 3, Valley Oak Woodland Avoidance, Minimization, and Mitigation* describes avoidance and mitigation requirements for impacts to valley oaks and valley oak woodlands. See Plan Section 6.3.2.3 for a complete description of this Condition.

2.3.6.3 Stream System Conditions

The Plan includes two conditions specific to the Stream System (see Plan Section 3.2.7, *Stream System*, Plan Table 3-4, and Plan Figure 3-8 for a description of how the Stream System is defined). The primary objective of Stream System Conditions is to protect watershed integrity (health and hydrology) by defining the extent of the Stream System and providing an incentive (in the form of a fee) to avoid land conversion within the Stream System boundary. Projects where effects on riparian and riverine constituent habitat are unavoidable must also comply with Community Condition 2, *Riverine and Riparian Avoidance and Minimization* described above.

- *Stream System Condition 1, Stream System Avoidance and Minimization* describes methods to avoid and minimize effects on the Stream System and therefore avoid paying fees described below in Stream System Condition 2, *Stream System Mitigation: Restoration*. See Plan Section 6.3.3.1 for a complete description of this Condition.
- *Stream System Condition 2, Stream System Mitigation: Restoration* describes the mitigation that will be required (in concert with Community Condition 2.3, *Riverine and Riparian Restoration*) for impacts to the Stream System. See Plan Section 6.3.3.2 for a complete description of this Condition.

2.3.6.4 Regional Public Project Programs

Conditions that will apply to activities in regional public programs (described above in Section 2.2.5 and in more detail in Plan Section 2.6.5, *Regional Public Programs*) include design and construction requirements to minimize the effects of regional public programs on wildlife movement, Covered Species, and their habitat. All such projects will also be subject to General Conditions and conditions on natural communities and Covered Species that apply. Projects that affect the Stream System are also subject to *Stream System Condition 1, Stream System Avoidance and Minimization*, and *Stream System Condition 2, Stream System Mitigation: Restoration*.

- *Regional Public Projects Condition 1, Transportation and Other Infrastructure Projects Design Requirements* describes design requirements for applicable public transportation projects located in the Reserve Acquisition Area to reduce the effects of barriers in potential conservation lands and minimize effects on Covered Species, natural communities, and wildlife movement. Plan Table 6-2 lists specific requirements for certain categories of projects and Plan Sections 6.3.4.1.4, *Design Guidance Measures*, and 6.3.4.2.1, *Construction Best Management Practices* describe the requirements in detail. Examples of design requirements include enhancing existing undercrossings, designating minimum sizing of culverts, and installing fencing to guide wildlife use of crossings. See Plan Section 6.3.4.1 for a complete description of this Condition.
- *Regional Public Projects Condition 2, Transportation and Other Infrastructure Projects Construction Best Management Practices* describes construction Best Management Practices for applicable transportation or other infrastructure projects

located in the rural portion of the Plan Area to reduce the effects of construction on natural communities and native species. This condition includes Best Management Practices for gravel road projects, roadside drainage, roadside construction, and post construction Best Management Practices. See Plan Section 6.3.4.2 for a complete description of this Condition.

- *Regional Public Projects Condition 3, Operation and Maintenance Best Management Practices* applies to operation and maintenance activities on public lands and on private lands where the activities are authorized pursuant to land use approvals granted by the Permittees and governed by conditions of approval. Operation and maintenance activities include utility line and facilities maintenance, public or private road maintenance, vegetation management, and mitigation monitoring. See Plan Section 6.3.4.3 for a complete description of this Condition.

2.3.6.5 Species Conditions

Conditions to minimize effects on Covered Species include measures that specify when surveys must be conducted, provide seasonal restrictions or spatial buffers to separate certain Covered Species from potential disturbance from Covered Activities, and sets forth the process for reporting survey results to Permittees to ensure that the appropriate Species Conditions will be incorporated into the conditions for the project's approval.

Surveys are required when certain land-cover types and other conditions are present on a project site. Plan Table 6-3 describes the locations and land-cover types that trigger species surveys and the survey period for required surveys. See Plan Section 6.3.5.4 of the Plan for exemptions to these requirements.

The following is a list of the Species Conditions in the Plan. See Plan Sections 6.3.5.6 through 6.3.5.15 for the content of each of these measures. Measures for species generally describe survey requirements, specific avoidance measures (i.e., buffer zones, seasonal avoidance, and other restrictions) that will be taken if surveys determine the species or certain habitat elements are present, and construction monitoring by a qualified biologist (see Plan Section 6.1.5 for the definition of qualified biologist) to ensure avoidance measures are implemented properly.

- Species Condition 1, Swainson's Hawk
- Species Condition 2, California Black Rail
- Species Condition 3, Western Burrowing Owl
- Species Condition 4, Tricolored Blackbird
- Species Condition 5, Giant Garter Snake
- Species Condition 6, California Red-legged Frog, Foothill Yellow-legged Frog, and Western Pond Turtle
- Species Condition 7, Central Valley Steelhead and Central Valley Fall-/Late Fall-run Chinook Salmon
- Species Condition 8, Valley Elderberry Longhorn Beetle
- Species Condition 9, Conservancy Fairy Shrimp
- Species Condition 10, Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

2.3.6.6 Reserve Management Conditions

Reserve management conditions establish requirements for public access and recreation on the Reserve System and describe incorporation of these requirements into reserve unit management plans (see Plan Section 5.3.2.1, *Reserve Unit Management Plans*).

- *Reserve Management Condition 1, Public Access and Recreation on Future Reserve Lands* describes the limited allowable recreational uses on future lands acquired for the Reserve System during Plan implementation, and the limited situations in which that use is allowed. This measure sets caps on the extent of new trails that may be constructed, limits the types of recreation that may be allowed, and sets standards for trail design and use. See Plan Section 6.3.6.1 for a complete description of this Condition.
- *Reserve Management Condition 2, Recreation Component of Reserve Unit Management Plans* describes what the recreation component of a reserve unit management plan will contain and the process for Placer Conservation Authority and Wildlife Agency approval if Permittees propose recreation activities in newly protected reserves. See Plan Section 6.3.6.2 for a complete description of this Condition.
- *Reserve Management Condition 3, Jump Start Lands* describes recreation that will be allowed on existing protected lands that may count towards Reserve System conservation commitments (see Plan Section 8.4.4, *Jump Start*). This measure describes how specific Jump Start Lands will be incorporated into the Reserve System, the process for determining allowable levels of recreation, and describing acreages of these properties that will not count towards the Reserve System because of recreational trails and usage. See Plan Section 6.3.6.3 for a complete description of this Condition.

2.3.7 Monitoring and Adaptive Management

Chapter 7 of the Plan describes the monitoring and adaptive management framework for the Conservation Plan; this framework will guide the development of a comprehensive monitoring program, which will be developed during the first 5 years of Plan implementation and as individual parcels are acquired as part of the Reserve System. The framework and the final monitoring program are intended to ensure compliance with Plan requirements, to assess the status of Covered Species and natural communities within the Reserve System, to evaluate the effects of management actions, and to assess whether the Plan's biological goals and objectives are being achieved.

Monitoring program objectives are stated in the Section 7.1.3 of the Plan, and include:

- Provide an organizational framework and decision-making process for evaluating monitoring, targeted studies, and other data to adjust management actions.

- Provide a process for incorporating monitoring, including targeted studies and new information, into management actions.
- Document the baseline condition of biological resources in the Reserve System and other key habitat (e.g., salmonid streams) outside of the Reserve System using existing data, modeling, and the results of field surveys.
- Improve understanding of biological resources in the Reserve System by incorporating results of field studies and pre- and post-acquisition surveys into existing data and modeling.
- Develop management-oriented conceptual models (Atkinson et al. 2004) that summarize understanding of and hypotheses about the structure and function of natural communities and factors that limit populations of Covered Species. Management-oriented conceptual models will be used to identify critical uncertainties, hypotheses, and assumptions; clarify likely responses to management actions (e.g., grazing, controlled burns) and environmental stressors (e.g., invasive competitors); identify variables to monitor and hypotheses to test; and design and change management practices.
- Incorporate hypothesis testing and experimental management into monitoring to address key uncertainties and to improve management and monitoring efforts.
- Develop and implement scientifically valid monitoring protocols at multiple levels to ensure that data collected will inform management and integrate with other monitoring efforts.
- Develop and implement accurate, reliable, feasible, and cost-effective monitoring protocols that produce data that can inform management efforts at multiple scales and that integrate with other monitoring efforts, and using accepted protocols when available.
- Ensure that monitoring data are collected, analyzed, stored, and organized so they are accessible to the Placer Conservation Authority, the Permittees, regulatory agencies, scientists, and, as appropriate, the public.

Plan Table 7-2 provides a summary and schedule of monitoring tasks that will be conducted throughout the permit term. Plan monitoring will also coordinate with other monitoring efforts in the Plan Area being conducted by other entities (see Plan Section 7.1.4.3, *Coordination with Other Programs*). Because some monitoring activities may require handling or disturbing Covered Species, take of Covered Species during monitoring activities is covered by the Plan if conditions listed in Plan Section 7.1.5, *Take Authorization during Monitoring* are met.

Plan Section 7.7, *Data and Reporting* lists reporting requirements for the monitoring program. Data on monitoring methods, results, and analysis must be managed, stored, and made available to Placer Conservation Authority staff, decision-makers, scientific advisors, Wildlife Agencies,

other interested government agencies, and other appropriate parties. A database and clear reporting procedure are also required for permit compliance.

2.3.7.1 Adaptive Management

Adaptive management is a decision-making process that will be used during Plan implementation to adjust future management actions based on new information. Adaptive management is based on a flexible approach whereby actions can be adjusted as uncertainties become better understood or as conditions change (see Plan Figure 7-1). Integrating adaptive management and monitoring is critical to the successful implementation of the Conservation Strategy. Monitoring is the foundation of an adaptive approach, and adaptive management actions are developed, in part, from the results of monitoring. See Plan Section 7.1.2, *Adaptive Management* for a description of how adaptive management will be conducted under the Plan. Plan Section 7.6, *Adaptive Management Program Implementation* describes the elements and structure of the adaptive management program and lists the Placer Conservation Authority's responsibilities for executing the program.

Adaptive management by the Placer Conservation Authority will be advised by four groups: the Wildlife Agencies, Science Advisors, land managers, and the public. Wildlife Agencies will provide feedback to the Placer Conservation Authority regarding proposed changes to Plan implementation based on the results of monitoring and provide guidance on the biology and conservation of Covered Species. The primary forum in which these discussions will occur is the Interagency Working Group described in Plan Section 8.2.6.4, *Interagency Working Group*. The Science Advisors are an independent group of scientists retained by Placer County (see Plan Section 1.4.5, *Science Advisors*) that will be consulted by the Placer Conservation Authority regularly regarding Plan implementation. The Placer Conservation Authority will share information with other land management agencies (e.g., County Parks, State Parks) regarding resources and management across reserve boundaries and on a regional scale. Members of the public will be able to provide input to the Placer Conservation Authority regarding adaptive management during periodic (at least annual) public hearings and regular meetings of the public advisory committee, which will be open to the public.

2.3.7.2 Levels of Monitoring

The monitoring framework includes a three-tiered approach that consists of landscape-, natural community-, and species-level monitoring. Landscape-level monitoring will collect large-scale information, such as changes in ecosystem processes and shifts in natural community distribution. Community-level monitoring will detect changes in the composition and function of natural communities, invasive species, and other important habitat factors for Covered Species. Species-level monitoring will measure the effects of management actions on Covered Species and track the distribution, status, and other information on Covered Species in the Reserve System and the Plan Area. Specific monitoring actions for each of these levels is summarized in Sections 2.3.7.6 through 2.3.7.8, below.

2.3.7.3 Types of Monitoring

The monitoring framework includes three main types of monitoring: compliance monitoring, effectiveness monitoring, and targeted studies.

Compliance monitoring (also known as implementation monitoring) will track the status of Plan implementation and document whether the requirements of the Plan are being met. Compliance monitoring verifies that the Permittees are carrying out the terms of the Plan, permits, and Implementation Agreement. The Placer Conservation Authority will track compliance monitoring and provide monitoring results to the Wildlife Agencies. See Plan Section 7.2.1.1, *Compliance Monitoring* for the components that will be tracked by compliance monitoring.

Effectiveness monitoring will assess whether implementation of the Conservation Strategy is achieving the Plan's biological goals and objectives and will evaluate whether the effects of implementing the Conservation Strategy are consistent with the assumptions and predictions made during development of the Conservation Strategy. Effectiveness monitoring will measure the effects of management actions on targeted communities and Covered Species, status and trends in resources, and status and trends of stressors to the biological resources. Effectiveness monitoring will include the development and assessment of success criteria for management actions. These criteria may include quantitative measures such as occupancy rates for vernal pool branchiopods, area of habitat suitable for Covered Species, etc. Quantifying these conditions before and after management will be the basis for judging success. Example success criteria for effectiveness monitoring are provided in Plan Table 7-1. Actual success criteria will be developed in the reserve unit management plans (see Plan Section 5.3.2.1.1, *Development of Reserve Unit Management Plans*) based on the communities and Covered Species (and their habitats) present, and the existing conditions of those communities and habitats. Plan Table 5-8 crosswalks each biological goal to its objectives, conservation measures, and monitoring actions. See Plan Section 7.2.1.2, *Effectiveness Monitoring* for a complete description.

Targeted studies may be needed to resolve critical uncertainties, the resolution of which is required to achieve the Plan's biological goals and objectives. Targeted studies will be implemented on an as-needed basis, when financial resources permit, and when uncertainties limit the ability of the Placer Conservation Authority to achieve the biological goals and objectives of the Plan. Pilot studies may also be needed if a proposed conservation measure is untested or if there is uncertainty about its effectiveness. For the purposes of the Plan, targeted studies that provide information about the effects of management actions are called *pilot projects* and targeted studies that address critical uncertainties are called *directed studies*. For a complete description of targeted studies under the Plan, see Plan Section 7.2.1.3, *Targeted Studies*.

2.3.7.4 Program Phases

The Plan's monitoring program includes two phases: inventory monitoring, and long-term monitoring and adaptive management. In general, activities in the inventory phase will occur during the first 5 years of Plan implementation, and thereafter on new parcels as the parcels are added to the Reserve System. The inventory phase will include documenting baseline conditions, initiating management and monitoring planning (a monitoring plan will be developed for each reserve unit management plan), refining management-oriented conceptual ecological models,

and implementing any necessary targeted studies. See Plan Section 7.2.2.1, *Inventory Phase* for a description of each of these elements of the inventory phase.

Activities in the long-term monitoring and adaptive management phase will begin on each site after the inventory phase is either complete or well under way. See Plan Section 7.2.2.2, *Long-term Monitoring and Adaptive Management Phase* for a list of tasks that will be accomplished by long-term monitoring and adaptive management. Because the Reserve System will be created over several decades, there will most likely be extensive overlap between activities in each phase during the first 10 to 20 years of Plan implementation (see Plan Figure 7-5, *Monitoring Program Phases*).

2.3.7.5 Guidelines for Monitoring

Section 7.2.3 of the Plan provides guidance for the design of the monitoring program including principles and steps that should be incorporated into monitoring design. This section of the Plan also describes the use of indicators in monitoring and the use and development of Plan monitoring protocols, as well as guidance on sampling design and species models.

2.3.7.6 Landscape-level Monitoring Actions

Landscape-level monitoring will be directed at tracking geographically large areas (e.g., the entire Reserve System or large portions of the Reserve System), landscape-scale processes, and regional issues that affect the Plan Area. Plan Section 7.3, *Landscape-level Monitoring Actions* summarizes the specific monitoring actions that the Placer Conservation Authority will carry out to track environmental issues at the landscape level and ensure that landscape-level goals and objectives are being met. The monitoring actions described in Plan Section 7.3 will facilitate monitoring the following:

- The amount of land-cover types in the Reserve System and Plan Area and their relationship to each other (e.g., succession or conversion from one community type to another, transitions zones between communities, degree of habitat fragmentation).
- Linkages, permeability, connectivity, and corridors.
- The amount and quality of land-cover types, natural communities, and other landscape features.
- Occurrences of invasive plant infestation, non-native wildlife species, and serious wildlife diseases in the Plan Area.
- The frequency, intensity, and geographic scope of disturbance events such as fires and floods.

The following landscape-level monitoring actions will be implemented. See relevant Plan sections for a full description of each action.

- Plan Section 7.3.1, *Assimilate Results of Pre-acquisition Assessments and Other Surveys* describes information on landscape features that will be collected through

pre-acquisition assessments. This includes biological surveys, updated land-cover mapping, assessments of habitat suitability for Covered Species, air photo interpretation, and the biological resources present or expected on site.

- Plan Section 7.3.2, *Monitor Land Cover in the Plan Area* describes how the Placer Conservation Authority will track all acres acquired within the Reserve System by land-cover type, constituent habitats and acres of enhancement/restoration, including in the Stream System. The Placer Conservation Authority will monitor land-cover types and habitat constituents in the Reserve System and throughout the Plan Area annually to track the amount of land-cover types, changes in land-cover types (and hence, natural communities), and changes in habitat constituents over the permit term, and the degree of fragmentation and connectivity in the landscape.
- Plan Section 7.3.3, *Assess and Monitor Landscape Linkages* describes how the Placer Conservation Authority will track the acquisition of lands that create movement corridors between Reserve System parcels (see Plan Goal L-2). In order to monitor landscape linkages (see Plan Objective L-2.1) the Placer Conservation Authority will use a combination of compliance monitoring (to ensure that land acquisition requirements are met) and effectiveness monitoring (to ensure that species utilize linkages effectively and that management actions to increase permeability or improve connectivity are successful).
- Plan Section 7.3.4, *Track Climate Change* describes how changes in temperature will be documented in the Plan Area during the permit term.
- Plan Section 7.3.5, *Track Invasive Species and Disease* describes how the Placer Conservation Authority will: track implementation and effectiveness of invasive plant control programs relative to success criteria (an invasive plant control program will be developed for all reserve units); monitor occurrences of invasive animals and management actions taken to control them; identify, monitor and report instances of disease in the Reserve System; monitor the effects of recreational use on biological resources in the Reserve System (protocols for evaluating the effects of recreational use will be developed during the inventory phase); and monitor disturbance events (i.e. events such as fire, drought, and flooding).

2.3.7.7 Natural Community-level Monitoring Actions

Plan Section 7.4, *Natural Community-level Monitoring Actions* describes the following natural community-level monitoring actions that will be implemented across all natural communities. See relevant Plan sections for a full description of each action.

- Plan Section 7.4.1, *Develop Conceptual Ecological Models* describes the development of conceptual models that may be helpful for informing Reserve System management.
- Plan Section 7.4.2, *Enhance Natural Community Mapping* describes methods that will be used to ground truth natural communities and constituent habitat on lands

acquired for inclusion in the Reserve System. This will also include identifying ecosystem functions that will be monitored, and the assessment of natural community enhancement, restoration, and creation actions.

Plan Section 7.4.3, *Monitor Natural Communities* describes the specific monitoring actions the Placer Conservation Authority will carry out to track environmental issues at the natural-community level and ensure that natural community-level goals and objectives are being met. These actions are summarized below.

- Plan Section 7.4.3.1, *Vernal Pool Complex and Grasslands* describes how the Placer Conservation Authority will monitor the condition of vernal pool complexes and annual grasslands in the Reserve System, with a focus on identifying and monitoring habitat that support or have the potential to support Covered Species. This section details the methods the Placer Conservation Authority will use to monitor restored and created vernal pools to assess the success of restoration and creation of vernal pool constituent habitats. It also describes actions that will be taken to monitor the success of grassland restoration, the effects of water quality management actions, and management of vernal pool hydrology. In addition, effects to ground squirrel populations will be monitored (ground squirrels provide critical habitat elements for a number of Covered Species).
- Plan Section 7.4.3.2, *Aquatic/Wetlands* describes how the Placer Conservation Authority will monitor the status of key characteristics of the aquatic/wetlands natural community within the Reserve System. It lists tasks that may be used to help determine the baseline condition of aquatic/wetland communities on the Reserve System. It also details the methods the Placer Conservation Authority will use to evaluate the success of creation/restoration of fresh emergent marsh, lacustrine, and non-vernal pool seasonal wetland constituent wetlands and enhancement of wetlands and ponds.
- Plan Section 7.4.3.3, *Riverine and Riparian* describes how the Placer Conservation Authority will monitor the riverine and riparian characteristics within the Reserve System. It lists tasks that may be used to help determine the baseline condition of riverine and riparian communities. It also provides examples of monitoring activities that the Placer Conservation Authority will use to evaluate the success of riparian and riverine restoration and describes how stream enhancement projects will be monitored before restoration commences and after restoration is complete to assess effectiveness of the project (success criteria will be site specific and established in reserve unit management plans).
- Plan Section 7.4.3.4, *Oak Woodland* describes how the Placer Conservation Authority will monitor oak woodland characteristics within the Reserve System, with a focus on oak regeneration and disease. It lists tasks that may be used to help determine the baseline condition of oak woodland in order to help identify areas where recruitment appears to be limiting oak regeneration; to identify areas in need of fuels treatments; and to identify the most suitable techniques to manage wildfire fuels. It also lists tasks that may be used to evaluate effects of Foothill oak woodland restoration, oak

woodland enhancement, and Valley oak woodland restoration. Monitoring will track and document the effectiveness of these measures to promote regeneration and recruitment of representative species, manage vegetation and invasive plants in the understory, manage invasive animals, and manage fuel loads to reduce the chance of catastrophic fire at enhanced and restored sites in the Reserve System.

- Plan Section 7.4.3.5, *Agriculture and Other Open Space* describes how the Placer Conservation Authority will monitor the 2,000 acres of rice lands set aside for giant garter snake. Because the other agricultural lands incorporated into the Reserve System will not be maintained specifically as Covered Species' habitat (although they will provide open space value), and will not count toward Covered Species' habitat protection commitments, they will not be monitored for biological conditions.

2.3.7.8 Species-level Monitoring Actions

Plan Section 7.5, *Species-level Monitoring Actions* describes species monitoring that will be implemented to ensure that species-level goals and objectives are being met. A summary of species-level monitoring actions is provided below. See relevant Plan sections for a full description of monitoring that will be conducted for each species. Also, see Plan Table 5-8 for a crosswalk of monitoring associated with species-level biological goals, objectives, and conservation measures for each species.

- Plan Section 7.5.1, *Swainson's Hawk*. Monitoring will include annual surveys that will be conducted to document and monitor success of Swainson's hawk nests in the Reserve System. This monitoring will be used to evaluate whether objective SWHA 1-1 has been fulfilled.
- Plan Section 7.5.2, *California Black Rail*. The Placer Conservation Authority will survey for rail occupancy on the Reserve System, monitor the success of habitat restoration and creation, evaluate the response of rails to restored/created habitat, and monitor potential threats to the black rail on the Reserve System. Occupancy surveys will be completed prior to and after habitat acquisition, and will be used to evaluate if objective BLRA-1.1 has been fulfilled.
- Plan Section 7.5.3, *Western Burrowing Owl*. Monitoring will include winter and breeding surveys to document the occurrence of overwintering and/or breeding burrowing owls within the Reserve System. Natural community-level monitoring in grasslands and suitable agricultural lands will include presence/absence surveys for burrows. Monitoring for burrowing owls will also document the species' response to the creation of burrows, and will monitor artificial burrows if installed on reserve lands. Potential threats to burrowing owls will be monitored.
- Plan Section 7.5.4, *Tricolored Blackbird*. Monitoring will include surveys to document the presence of nesting tricolored blackbird colonies on the Reserve System, and the use of foraging habitat by tricolored blackbirds to inform enhancement and restoration measures. Nest colony location and size will be monitored for colonies on reserve lands. Enhanced or restored wetlands and suitable

created ponds will be monitored to document species response (i.e., colonization by a colony or change in colony size). Potential threats to tricolored blackbirds will be monitored. Surveys of tricolored blackbird nesting colonies on the Reserve System will be used to evaluate whether objective TRBL-1.3 is met.

- Plan Section 7.5.5, *Giant Garter Snake*. Monitoring will include identifying suitable habitat for giant garter snake during acquisition surveys on parcels in the western portion of the Plan Area (see Plan Figure 5-3 and Plan Section 5.3.1.6.5, *Giant Garter Snake*). The Placer Conservation Authority will survey for presence of giant garter snakes in suitable habitat identified in these areas. The Placer Conservation Authority will also monitor restored aquatic and upland habitat for giant garter snake presence, and will monitor for potential threats to giant garter snake such as non-native predators and competitors.
- Plan Section 7.5.6, *Western Pond Turtle*. Monitoring will include surveys of western pond turtle habitat on the Reserve System, including habitat elements such as basking sites. Surveys will also be conducted to document whether turtles are present (i.e., occupancy), to guide long-term monitoring, and to prioritize management actions. Restored aquatic and upland habitat for western pond turtle will be monitored to document species response (i.e., colonization of an area by pond turtles or changes in the average number of individuals in occupied habitat). Potential threats to western pond turtles will be monitored.
- Plan Section 7.5.7, *Foothill Yellow-legged Frog*. Monitoring will include surveys for yellow-legged frog in potentially suitable habitat in the Reserve System. The Placer Conservation Authority will monitor the response of foothill yellow-legged frogs to restoration and creation of riparian habitat using visual surveys to assess the presence of individuals. Potential threats to foothill yellow-legged frogs will be monitored.
- Plan Section 7.5.8, *California Red-legged Frog*. Monitoring will identify suitable habitat for California red-legged frog (includes ponds, fresh emergent marsh, seasonal wetlands, riverine/riparian, and wetland land-cover types and constituent habitats in the eastern Foothills) during acquisition surveys. The Placer Conservation Authority will survey for presence of California red-legged frog in suitable habitat, monitor the response of California red-legged frogs to aquatic habitat restoration, and monitor potential threats to California red-legged frogs in the Reserve System.
- Plan Section 7.5.9, *Salmonids: Central Valley Steelhead and Central Valley Fall-/Late Fall-run Chinook Salmon*. Monitoring will include surveys in streams within the Reserve System, and in Bear River, Raccoon Creek, Auburn Ravine, and Dry Creek watersheds to document status of these fish. Surveys of habitat condition will be conducted on new reserves acquired into the Reserve System. The Placer Conservation Authority will monitor the response of covered fish species to aquatic habitat restoration and monitor potential threats to these species in the Reserve System.

- Plan Section 7.5.10, *Valley Elderberry Longhorn Beetle*. Monitoring for valley elderberry longhorn beetle will include documenting the occurrences of host elderberry plants (*Sambucus* sp.) on new reserves acquired into the Reserve System. At each reserve where suitable elderberry shrubs occur, the Placer Conservation Authority will survey for valley elderberry longhorn beetle to determine presence at the site. The Placer Conservation Authority will also monitor the response of valley elderberry longhorn beetle populations to habitat restoration. Potential threats to valley elderberry longhorn beetle, especially the effects of Argentine ants, will be monitored.
- Plan Section 7.5.11, *Vernal Pool Branchiopods*. There will be extensive monitoring for vernal pool branchiopods within vernal pool constituent habitat to assess whether Plan objectives to maintain an occupancy rate of vernal pool fairy shrimp and vernal pool tadpole shrimp on the Reserve System that is equal to or greater than that of vernal pools that will be lost, are achieved (see objectives VPB-1.1 and VPB-1.2 and Plan Table 5-8). Monitoring will include two phases: an Initial Survey Phase and an Occupancy Phase. The Initial Survey Phase is the period of time during which data will be collected to establish Occupancy Rate Standards (the target occupancy rates for vernal pool fairy shrimp and vernal pool tadpole shrimp on the Reserve System). Both an area-based and a pool-based Occupancy Rate Standard will be developed. The Occupancy Phase is the period of time from the end of the Initial Survey Phase to the end of the permit term. After the Occupancy Rate Standards are set for both species, monitoring will be conducted within the Reserve System to determine whether vernal pools in the Reserve System meet this occupancy rate on a long-term basis. See Plan Section 7.5.11.1.1, *Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp* and Plan Section 5.3.1.6.10, *Vernal Pool Branchiopods*, for details on Occupancy Rate Standards, the Initial Survey Phase, and the Occupancy Phase. These sections define each of these elements, describe how Occupancy Rate Standards will be set, and provide detailed methods that will be used for each monitoring phase.

A different monitoring approach will be taken for Conservancy fairy shrimp. Surveys for Conservancy fairy shrimp in habitat to be impacted will be limited to habitat within the two watersheds where the species may occur; if impacts to occupied Conservancy fairy shrimp habitat occur, monitoring will be required on reserve lands to ensure that at least three occurrences of Conservancy fairy shrimp are protected for each occurrence taken as a result of Covered Activities.

The Placer Conservation Authority will monitor vernal pool branchiopod occupancy in vernal pool habitat on the Reserve System before and after enhancement actions in order to adaptively improve management. In cases where vernal pool branchiopod cysts are translocated to restored or created vernal pools, the Placer Conservation Authority will monitor restored and created pools for vernal pool fairy shrimp and vernal pool tadpole shrimp annually for at least 15 years after translocation. Plan Section 7.5.11.3, *Evaluate Species' Response to Vernal Pool Restoration/Creation* describes how results of these surveys will be incorporated into calculations of

occupancy rates. Targeted studies will be conducted as needed. Potential threats to vernal pool branchiopods will also be monitored.

2.4 Implementation

Chapter 8 of the Plan describes how Plan implementation will be coordinated with implementation of the CARP and In-lieu Fee Program as part of the overall Placer County Conservation Program. The chapter also describes implementation structure and policies, approval processes, how the Reserve System will be assembled and managed, and the roles and responsibilities of the Permittees and state and federal agencies. These elements are summarized below; see Plan Chapter 8 for a complete description.

2.4.1 Coordinated Implementation of the Placer County Conservation Program

Implementation of the Conservation Plan, CARP, and In-lieu Fee Program will be coordinated in several ways, including the following:

- **Funding.** Payment of Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan fee(s) (see summary of fees in Section 2.8 below and in Plan Section 9.4.1) will satisfy the requirements of both the Plan and the CARP. For example, if a Covered Activity affects vernal pool wetlands, mitigation requirements will include payment of a fee to fund one set of compensatory mitigation actions that would fulfill both Plan and CARP requirements. Funding management and oversight will also be coordinated.
- **Avoidance and Minimization.** Conservation Plan and CARP avoidance and minimization requirements will be consistent. For example, avoidance areas and buffer distances for aquatic resources under both the Conservation Plan and the CARP will be consistent.
- **Land Acquisitions.** Lands acquired for the Reserve System to fulfill land acquisition commitments in the Conservation Plan may also be used as sites for aquatic resource mitigation projects for the In-lieu Fee Program.
- **Land Management and Enhancement.** Reserve System management and enhancement under the Plan will also provide management for aquatic resource mitigation sites for purposes of the In-lieu Fee Program.
- **Wetland Creation and Restoration.** Wetlands restored or created to fulfill restoration and creation commitments in the Plan will also create wetland mitigation “credits” under the In-lieu Fee Program.

Implementation of the Placer County Conservation Program will also require coordination between Permittees and state and federal agencies including:

- **Funding.** The Wildlife Agencies, Corps, and the Central Valley Regional Water Quality Control Board will coordinate oversight of the Placer Conservation

Authority's management and expenditure of funding for Plan implementation and In-lieu Fee Program implementation.

- **Avoidance and Minimization.** The Placer Conservation Authority, the County, the City, the Wildlife Agencies, the Corps, and the Central Valley Regional Water Quality Control Board will coordinate on providing guidance to project proponents regarding Plan, CARP, and Section 404 avoidance and minimization requirements, (e.g., to ensure that guidance regarding required avoidance areas and buffer distances for Covered Activities is consistent for the Plan, the CARP, and Section 404 permit requirements).

2.4.1.1 Land Acquisitions

The Wildlife Agencies and the Corps will coordinate on approvals of Reserve System lands that will also be used for aquatic resource enhancement, restoration or creation for the In-lieu Fee Program.

- **Land Management and Enhancements.** The Wildlife Agencies and the Corps will cooperate on approvals of management plans for Reserve System lands that will be also be used for aquatic resource enhancement, restoration or creation for the In-lieu Fee Program. The review of draft management plans by the Wildlife Agencies and the Corps will be coordinated to ensure that management actions meet all relevant regulatory requirements but are consistent.
- **Wetland Creation and Restoration.** The approval of the Wildlife Agencies and the Corps is required for proposed wetland enhancement, restoration, or creation projects. The Wildlife Agencies and the Corps will coordinate on review of restoration/mitigation project proposals.
- **Interagency Review Team.** A group consisting of the Wildlife Agencies, the Corps, U.S. Environmental Protection Agency, and the Central Valley Regional water Quality Control Board, will provide coordinated and consistent guidance and input to the Permittees regarding implementation of the Plan and In-lieu Fee Program, and the use of In-lieu Fee Program credits for Covered Activities.

2.4.2 Implementation Structure

Upon issuance of the incidental take permits each Permittee would be provided authorization for take that results from Covered Activities that they implement. The County and the City would also be able to extend take authorization for take resulting from Covered Activities under their jurisdiction (see Plan Chapter 2, *Covered Activities*). The County and the City will be responsible for confirming that such activities are eligible for coverage under the permits and for determining that each application for coverage under the Plan is complete (see Plan Section 6.2, *Program Participation: Receiving Take Authorization under the Plan*). The County and the City may extend take authorization, along with other local approvals and entitlements, for eligible activities that meet all applicable requirements of the permits, the Plan, and the Implementing Agreement. The County and City will report relevant information about such activities to the

Placer Conservation Authority to allow the Placer Conservation Authority to track impacts, compliance monitoring, and other requirements. The Placer County Water Agency and South Placer Regional Transportation Authority will also report information about Covered Activities they conduct to the Placer Conservation Authority to allow for tracking.

An Implementing Agreement among the Permittees and the Wildlife Agencies has been prepared for the Plan (Plan Appendix B, *Implementing Agreement*) to satisfy the requirements of the NCCP Act. The Implementing Agreement specifies the responsibilities of each Plan participant and various other provisions agreed to by the Plan participants. The Implementing Agreement cannot alter the terms of the incidental take permit.

See Plan Sections 8.2.2 through 8.2.8 and Plan Figure 8-1 for a description of the structure, relationships, roles, and responsibilities of entities that will participate in Plan implementation. See Plan Section 8.3, *Responsibilities of the Placer Conservation Authority* for a description of the Placer Conservation Authority's responsibilities.

2.4.3 Establishing the Reserve System

The Placer Conservation Authority will be responsible for establishing the Reserve System as described in Plan Section 8.4, and will ensure that reserve lands meet the all criteria listed in Plan Section 8.4. In order to be counted toward the Plan's land acquisition commitments, lands must meet all applicable criteria described in Plan Section 8.4, must be included in a Reserve Unit Management Plan (see Plan Section 5.3.2.1, *Reserve Unit Management Plans*), and must be included in the Monitoring and Adaptive Management Plan. Acquisitions may be counted toward meeting the land acquisition commitments of the Plan before the Reserve Unit Management Plan has been completed if the Placer Conservation Authority owns the land, or if the property owner is bound by a conservation easement that requires preparation of a management plan consistent with the requirements of the Plan.

Plan Sections 8.4.1.1 through 8.4.1.3 describe additional criteria that must be met for reserve system lands in the Potential Future Growth Area, vernal pool complex lands, and lands acquired for vernal pool restoration and creation. See Plan Section 8.4.10 for a description of grazing leases within the Reserve System. Plan Section 8.4.11 describes how Reserve Lands will only be purchased from willing sellers, and Plan Section 8.4.1.2 address how gifts of land may contribute to the Reserve System.

2.4.4 Process for Acquiring Lands

Section 8.4.2 of the Plan describes the following steps that must be taken for acquiring lands for the Reserve System; all steps must be taken for each acquisition. Plan Figure 8.2 illustrates these steps. The process for land acquisitions include: site identification (Step 1); pre-acquisition assessment (Step 2); site prioritization (Step 3); Wildlife Agency concurrence (Step 4); appraisal (Step 5); purchase offer, which includes a due diligence review of property encumbrances (Step 6); facilities assessment and site preparation (Step 7); and a reserve unit management plan (Step 8).

The Placer Conservation Authority may partner with other groups and provide matching funds for land acquisitions to purchase larger parcels than would be possible without the partnerships.

The Placer Conservation Authority will determine, subject to Wildlife Agency approval, the extent to which such acquisitions can be counted toward Plan commitments based on the purpose and location of the acquisition, the management of the land acquired, the proportional fair share acreage and function of the property acquired through Plan funding, and consistency with the goals and objectives of the Plan.

2.4.5 Stay Ahead Provision

Progress toward assembling the Reserve System must stay ahead of take allowed under the permits. See Plan Section 8.4.3, *Stay Ahead Provision* for a complete description of this requirement. The Stay Ahead provision will minimize the temporal loss of habitat. To measure compliance with the Stay Ahead provision, land-cover types will be aggregated by natural and semi-natural communities. The amount of each natural community conserved, restored, or created as a proportion of the total requirement by natural community must be equal to or greater than the impact on the natural community as a proportion of the total impact expected by all Covered Activities. Compliance with the Stay Ahead provision for habitat restoration or creation commitments will be tracked separately from land acquisition. Compliance with the Stay Ahead provision and overall crediting for habitat restoration or creation commitments will be measured and counted at the point when construction of the restoration or creation is completed.

To allow time for start-up tasks to occur, the Stay Ahead provision will not apply during the first 2 years of Plan implementation (i.e., during the first 2 years after the last local implementing ordinance takes effect). To provide flexibility during implementation, the Placer Conservation Authority may fall behind its Reserve System assembly requirement for each natural community or semi-natural community by a maximum of 10 percent for a period of three years without violating the Stay Ahead provision. The Placer Conservation Authority will not allow a deficit of any size in any land acquisition or restoration commitment to persist after the end of three consecutive years. The Placer Conservation Authority will monitor the status of the Stay Ahead provision throughout Plan implementation and will report the status of the Stay Ahead provision in each annual report, beginning with the third annual report. Plan Sections 8.4.3.6 and 8.4.3.7 address measures that will be taken if the Stay Ahead provision is not fulfilled.

Land acquired in full or in part by state or federal agencies to assist species recovery under the Plan (see Plan Section 8.4.3.4) may be counted toward compliance with the Stay Ahead provision. The Plan assumes some funding by the state and federal governments will be available to implement a portion of the Conservation Strategy. However, state and federal funding, including but not limited to Section 6 grants, cannot be used to fulfill mitigation requirements of the Plan.

2.4.6 Jump Start

Lands listed in Plan Table 8-1 that have already been acquired during Placer County Conservation Program development may be counted toward Plan acquisition commitments, and counted as “jump start” lands. If these jump start lands do not meet requirements for inclusion in the Reserve System, the Placer Conservation Authority may expend funds to augment management of these lands to meet the Plan requirements.

2.4.7 Advance Acquisition of Vernal Pool Complex Lands

Within 2 years of local implementing ordinances for the Plan being adopted, the Placer Conservation Authority will acquire vernal pool complex lands containing a minimum of 160 acres of vernal pool constituent habitats, of which at least 53 acres will be delineated as vernal pools. The advance acquisition of these vernal pool complex lands will be subject to Wildlife Agency review and approval, and must meet the criteria for Reserve System lands in Section 8.4.1, *Criteria for Reserve System Lands*. With the exception of the Bradley property, the jump-start lands listed in Plan Table 8-1 do not contribute towards meeting the advance acquisition. No more than 1,800 acres of vernal pool complex and 80 wetted acres of vernal pool constituent habitats (15 percent of the total allowed effects) will be authorized for take under the Plan until this advance acquisition goal is met.

The advanced acquisition requirement is designed to ensure that more high-quality vernal pools and vernal pool complex lands are protected than taken (especially early in the permit term), that the Placer Conservation Authority will exceed the Stay Ahead requirement early in the permit term for vernal pool complex, and that occupied vernal pool complexes are protected early in the permit term. Protecting high-quality vernal pools occupied by covered branchiopods early in the permit term will minimize temporal loss of habitat and help ensure that the Stay Ahead requirement will be met throughout the permit term.

2.4.8 Private Mitigation and Conservation Banks

Credits purchased from existing or future mitigation and conservation banks within the Plan Area can count toward Plan protection and restoration commitments if the banks are consistent with all of the relevant standards in Chapter 5, *Conservation Strategy*, and Chapter 7, *Monitoring and Adaptive Management Program*. If the Placer Conservation Authority concludes that a bank is consistent with Plan standards, it will provide a written summary of its review and conclusion to the Wildlife Agencies. The Placer Conservation Authority will also provide information on how bank credits will count towards specific Plan commitments. If the Wildlife Agencies concur with the Placer Conservation Authority, credits at the bank may be purchased to meet Plan land acquisition and restoration commitments as specified by the Placer Conservation Authority. Thereafter, the Placer Conservation Authority may purchase credits at the bank to meet applicable Plan commitments, and proponents of Covered Activities may purchase credits at the bank to fulfill applicable Plan conditions on Covered Activities. See Plan Section 8.4.7, *Private Mitigation and Conservation Banks* for a complete description of this process.

2.4.9 Mitigation for Activities not Covered Under the Plan

Proponents of projects in or near the Plan Area that are not covered by the Plan, but that affect Covered Species, may be interested in using the Plan as a vehicle to implement mitigation for the impacts of their projects. Some non-covered project proponents may also be interested in contributing land to the Plan to fulfill their mitigation requirements. Using the Plan's Conservation Strategy to guide mitigation for activities not covered under the plan will help ensure compatibility with the Plan and potentially achieve greater conservation benefits.

If land acquisitions used to fulfill mitigation requirements for non-covered projects occur within the Plan Area, such lands may, in limited situations and with Wildlife Agency approval, be added to the Reserve System and counted toward the conservation component (but not the mitigation component) of the Plan's land acquisition commitments (see Section 9.4, *Funding Sources and Assurances*). In order to count towards Plan commitments, the criteria listed in Plan Section 8.4.8 must be met.

2.4.10 Conservation Easements

To be incorporated into the Reserve System and counted toward Plan land acquisition commitments, all lands must be permanently protected by a conservation easement consistent with the requirements described in Plan Section 8.4.9, *Conservation Easements*. For lands owned by the Placer Conservation Authority or a Permittee, permanent protection must be ensured through a conservation easement granted to a Wildlife Agency or an appropriate third-party easement holder approved by the Wildlife Agencies. The Placer Conservation Authority will use the template conservation easements in Plan Appendix K, *Conservation and Agriculture Easement Templates* for Reserve System lands. The Placer Conservation Authority will follow these template conservation easements as closely as possible. However, reasonable variations from the templates may be proposed to address site-specific conditions and circumstances. In addition, for agricultural lands added to the Reserve System as described in Plan Section 8.4.9.3.2, *Cultivated Agricultural Lands and Irrigated Pasture Lands*, the Placer Conservation Authority may be required to use other forms of agricultural conservation easements approved by state or federal agencies. The Placer Conservation Authority and the Wildlife Agencies must review and approve any variations from the easement templates, and all baseline documentation reports prepared for such conservation easements.

The guidelines that all conservation easements acquired to meet Plan land acquisition requirements must adhere to are detailed in Plan Section 8.4.9.1, *General Guidelines*. Plan Section 8.4.9.2, *Prohibited Uses* lists activities that each conservation easement will prohibit except as necessary to maintain or enhance conservation values as described in the Reserve Unit Management Plan, or in the portions of the property designated for incompatible activities.

Activities that would otherwise be prohibited by a habitat conservation easement may be allowed in conservation easements on agricultural lands, if the activities directly support an allowable existing agricultural operation. See Plan Section 8.4.9.3, *Conservation Easements on Agricultural Lands Activities* for a complete description.

2.4.11 Land Dedication in Lieu of Land Conversion Fee

Land may be provided in lieu of all or a part of the land conversion fee (see Plan Section 8.4.13) if it meets all of the conditions listed below.

- The land meets the criteria for Reserve System Lands in Plan Section 8.4.1, *Criteria for Reserve System Lands*.
- Adding the lands to the Reserve System will mitigate the effects on Covered Species from the Covered Activity for which the dedication is offered.

- The transaction is approved by the Placer Conservation Authority and the Wildlife Agencies.
- The Placer Conservation Authority and the project proponent enter into a land dedication agreement (see Plan Section 8.4.13.4, *Land Dedication Agreement*).

The process for submitting land in lieu of fee proposals, calculating fee reductions, and development of a land dedication agreement is provided in Plan Section 8.4.13, *Land Dedication in Lieu of Conservation Fee*.

2.4.12 Management and Enhancement of the Reserve System

The Placer Conservation Authority will direct the management and enhancement of land acquired for the Reserve System; management measures will include such things as regular patrol, trash removal, fence/gate installation and repair, road maintenance, and other necessary activities. Some management and enhancement measures will be performed by the County and City. For example, Placer County Parks Division would be responsible for maintaining all County parks that are part of the Reserve System, including Hidden Falls Regional Park. The Placer Conservation Authority will coordinate with the County, City, and other local agencies to implement some management or enhancement measures that it cannot perform itself or would perform less efficiently. The Placer Conservation Authority may also contract with a third-party agency or organization to conduct management activities within the Reserve System on the Placer Conservation Authority's behalf.

The Placer Conservation Authority will be responsible for developing system-wide management plans for the Reserve System, as well as Reserve Unit Management Plans for all units of the Reserve System to guide site-specific management (see Plan Section 5.3.2.1, *Reserve Unit Management Plans*). The Placer Conservation Authority will also be responsible for interim management of acquired lands prior to completion of these Reserve Unit Management Plans. Plan Section 8.5.1 *Reserve Unit Management Plans* provides details regarding the development of these plans.

2.4.13 Restoration and Creation of Natural Communities and Covered Species Habitat

The Placer Conservation Authority will be responsible for natural community-level restoration and creation actions (see Plan Section 5.3.3.3, *Natural Community-level Restoration/Creation*), and species-specific restoration actions (see Plan Section 5.3.3.4, *Species-specific Restoration Actions*). The Placer Conservation Authority will direct the development and implementation of detailed restoration plans and specifications for individual restoration projects. Plan Section 8.7.1, *Restoration Plans* lists the requirements that these restoration plans must satisfy.

The Placer Conservation Authority can also approve credit for all or a portion of special habitat fees in exchange for the restoration/creation, management, and monitoring of wetlands, streams, or riparian areas that meets all applicable requirements, or for the purchase of appropriate wetland restoration or creation credits in a conservation bank or mitigation bank approved by the Placer Conservation Authority in accordance with Plan Section 8.4.7, *Private Mitigation and*

Conservation Banks. See Plan Section 8.7.2, *Restoration or Creation in Lieu of Special Habitat Fees* for a description of this process.

2.4.14 Monitoring and Adaptive Management

The Placer Conservation Authority is responsible for implementing and administering the monitoring and adaptive management program summarized in Section 2.6 above and described in Chapter 7 of the Plan. Plan Section 8.8, *Monitoring and Adaptive Management* describes the Placer Conservation Authority's specific roles and responsibilities, how the Placer Conservation Authority will seek and incorporate input from outside groups, and will seek approval of monitoring personnel for take of Covered Species that may occur during monitoring activities.

2.4.15 Take Authorization under the Plan

For projects implemented by a Permittee, the Permittee will be responsible for ensuring that the project complies with the requirements of the Plan, following the evaluation process described in Plan Section 6.2.1, *Evaluation Process for Permittee Projects*. The following sections summarize specific roles and responsibilities for entities participating in the Plan. See Plan Section 8.9, *Take Authorization Under the Plan* for a complete description.

County and City. The County and the City may extend take coverage to projects proposed by third parties provided that the projects are Covered Activities, are subject to the County's or City's land use authority, and are in compliance with the requirements of the Plan. To receive take authorization under the state and federal permits, third-party project proponents must apply to the City or the County for take authorization following the process described in Plan Section 6.2.2, *Application Process for Private Projects*. The County and the City will review participation packages submitted within their jurisdictions and determine, in consultation with the Placer Conservation Authority, whether to extend take authorization as described in Plan Section 6.2.2, *Application Process for Private Projects*. The Placer Conservation Authority will develop a checklist for evaluating third-party applications within the first 6 months after the permits take effect.

Placer Conservation Authority. The Placer Conservation Authority will consult with Permittees' on their decisions regarding the use and extension of take authorization and provide supporting information such as draft checklists, template applications, and fee calculator. The Placer Conservation Authority will also participate in review of participation packages and will promote coordination among the Permittees to ensure that conditions on Covered Activities are implemented and enforced consistently and effectively. The Placer Conservation Authority will have the specific responsibilities and authorities related to the Permittees' use of take authorization and extension of take authorization to project proponents listed in Plan Section 8.9.2, *Placer Conservation Authority Responsibilities*.

Participating Special Entities. For projects within the Permit Area that are not implemented by a Permittee or subject to the land use authority of the County or the City, the project proponent may apply for take coverage under the Plan as a Participating Special Entity as described in Plan Section 8.9.4, *Take Authorization for Participating Special Entities*. In order to receive take coverage, the effects of the proposed project must have been evaluated as part of potential future

growth and be included in the potential take covered in the permits. Entities that may apply for coverage as Participating Special Entities include existing or future school districts, water districts, irrigation districts, transportation agencies, local park districts, geologic hazard abatement districts, other utilities or special districts, or other public or private landowners, such as those within the Roseville Annexation Areas (see Plan Section 8.9.4.2, *Potential Roseville Annexation Area*).

Participating Special Entities must apply directly to the Placer Conservation Authority to receive take coverage under the permits and the Placer Conservation Authority must establish a legally enforceable contractual relationship. Plan Section 8.9.4 provides examples of special districts that are eligible to apply for coverage as a Participating Special Entity. Plan Section 8.9.4.1, *Application Process for Participating Special Entities* describes the process a Participating Special Entity must go through to receive take authorization from the Placer Conservation Authority. If the Placer Conservation Authority chooses to extend take authorization, it will issue a Certificate of Inclusion to the Participating Special Entity that provides take authorization under the permits for the proposed project.

Plan Section 8.9.4.2, *Potential Roseville Annexation Area* describes specific activities in the Potential Roseville Annexation Area (see Plan Figure 8-3) that may apply for take coverage under the Plan as Participating Special Entities and lists the conditions these activities would need to meet for the Placer Conservation Authority to extend take coverage.

Plan Section 8.9.5, *Placer Vineyards Specific Plan* describes specific conditions that will apply to the Placer Vineyards Specific Plan.

Wildlife Agencies. The Wildlife Agencies will monitor compliance with the permits primarily by reviewing and commenting on annual reports and monitoring reports (see Section 8.11, *Reporting*, and Section 8.12, *Schedule and Milestones*). The Wildlife Agencies will participate in the Interagency Working Group (see Plan Section 8.2.6.4), and the Interagency Review Team for the In-lieu Fee Program. The Wildlife Agencies may also monitor the Permittees as they extend take for Covered Activities. The Permittees will transmit copies of application materials, or Permittee consistency documentation, to the Wildlife Agencies upon request. See Plan Section 8.9.3 for a list of activities that require consultation with, or review and approval of, the Wildlife Agencies before take authorization can be provided.

2.4.16 Coverage Option for Certain Minor Activities

“Minor activities” as described in Plan Section 2.7, *Activities not Covered by this Plan* are not subject to Plan requirements. However, if a property owner of such a site wishes to be covered under the Plan, they may apply for coverage under the permits in accordance with Section 6.2, *Program Participation: Receiving Take Authorization under the Plan*. See Plan Section 8.9.6 *Coverage Option for Certain Minor Activities* for a description of allowing take coverage for this category of projects.

2.4.17 Compliance Tracking and Data Management

Compliance Tracking. The Placer Conservation Authority will track all aspects of compliance with the terms and conditions of the permits. See Plan Section 8.10.1, *Compliance Tracking* for a

description of data that the Placer Conservation Authority will maintain. The purpose of monitoring this information will be to track the amount of take that has occurred and the Placer Conservation Authority's progress toward achieving biological goals and objectives for Covered Species and natural communities. This tracking of progress will also help ensure compliance with the Stay Ahead provision.

Database Development and Maintenance. The Placer Conservation Authority will develop and maintain a comprehensive data repository to track permit compliance and all other aspects of Plan implementation for which reporting is required, including land and stream management and monitoring. Plan Section 8.10.2, *Database Development and Maintenance* describes in detail the types of information that will be collected, stored and maintained and describes possible formats for and requirements for the data repository.

2.4.18 Reporting and Schedule

Plan Table 8-2 lists key implementation milestones and timeframes for meeting them. Plan Section 8.12, *Schedule and Milestones* describes tasks that will be accomplished during various phases of Plan implementation.

The Placer Conservation Authority will prepare annual reports over the permit term that document permit compliance, conservation measures, management measures, restoration/creation measures, and monitoring results. The annual reports will summarize the previous calendar year's implementation activities, and be completed by March 1 following the reporting year. No annual report will be required for the first partial calendar year of Plan implementation. Annual reports will require synthesis of data and reporting on important trends such as land acquisition, fee collection, and habitat restoration. Plan Section 8.11, *Reporting* lists the goal for the annual report as well as minimum reporting requirements that must be fulfilled.

Annual reports will be submitted to the Permittees, the Wildlife Agencies, and other interested parties, and will be available to the public and posted on the Plan web site. The Placer Conservation Authority will also distribute these reports to science advisors periodically for their review (see Plan Section 8.2.7, *Science Advisors and Land Managers*).

2.5 Cost and Funding

Chapter 9 of the Plan describes how Plan costs were estimated, describes Plan budgets and funding sources, methods used to determine fee amounts, and how fee amounts will be adjusted over the permit term in order to ensure adequate funding (see Plan Section 9.2, *Cost to Implement the Habitat Conservation Plan/Natural Community Conservation Plan*, Plan Section 9.3, *Cost Estimate Methodology and Assumptions*, and Plan Section 9.4, *Funding Sources and Assurances*). Methods for calculating fees based on project impacts are described in Plan Section 9.4.1, *Habitat Conservation Plan/Natural Community Conservation Plan Development Fees*.

Plan Table 9-1, *Summary of Capital and Total Cumulative Operating Costs through 50-year Permit Term* shows anticipated costs of each cost category considered in developing cost estimates; Plan Appendix L, *Cost Model and Assumptions* provides additional detail. Plan Table 9-4, *Funding Plan* summarizes the expected revenues and their sources over the 50-year permit term. The funding plan fully funds the estimated cost of the Plan. Plan Table 9-5, *Chart of*

Effects and Development Fees provides a summary of the rationale for each of the development fees, the areas subject to each fee, and a description of how the fees will be used and tracked. Plan Tables 9-6, *Land Conversion Fee Schedule* and 9-7, *Special Habitats Fee Schedule* provide the fee amount for each development fee. Two mechanisms will be used to adjust fee levels over the permit term to ensure adequate Plan funding: annual automatic adjustments based on indices (see Plan Table 9-8, *Development Fee Adjustment indices*), and periodic assessments conducted every five years. Plan Section 9.4.0.7, *Adjustment of Development Fees* provides the methods and specific timing for conducting these adjustments.

Plan funding will come from sources in the following three categories: Plan Development Fees, Local Funding, and State and Federal Funding.

Plan development fees include a land conversion fee for permanent effects, special habitat fees for effects specific to wetlands, streams, and other sensitive habitats, and temporary impact fees for temporary effects. These development fees and how they were derived are described in Plan Section 9.4.1, *Habitat Conservation Plan/Natural Community Conservation Plan Development Fees*.

Plan Section 9.4.1.9, *Private Applicant Options to Pay Fees with Special Tax or Assessment District* and Plan Section 9.4.1.10, *Land Provided in Lieu of Development Fees* describe alternatives to the payment of development fees and conditions that must be met in order to allow the use of these alternatives in place of paying all or a portion of fees. Also, see Section 2.4.11 above and Plan Section 8.4.13, *Land Dedication in Lieu of Land Conversion Fee* for additional details.

Local Funding will include other development funding for open space (i.e., open space related fees separate from Plan development fees), credit for dedication of existing open space, investment and interest income, and leases on rice land. Depending on the source, funding will be allocated to either mitigation or conservation actions. Local funding sources are described in Plan Section 9.4.2, *Local Funding*.

State and Federal Funding will include federal and state grant programs. Most state and federal funding can only be used to provide for conservation actions in the Plan Area and cannot be used for the mitigation share of Plan costs. Potential state and federal funding sources and restrictions on their use are described in Section 9.4.3, *State and Federal Funding*. State and federal funding will fund the acquisition of a maximum of 13,905 acres of the Reserve System (this is the share of the Reserve System that provides for the conservation – not mitigation – of Covered Species). State and federal contributions can also provide funds for restoration and enhancement of wetland habitats that are independent of effects to Covered Species. Plan Section 9.4.3.3, *Mitigation and Conservation Components* provide guidance for delineating conservation versus mitigation under the Plan.

2.6 Action Area

The action area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action.” For the proposed project, the action area encompasses approximately 270,000 acres in western Placer County and

a small portion of eastern Sutter County as previously described in Section 2.1.4, *Permit Area* of this Biological Opinion.

2.7 Analytical Framework for the Jeopardy and Adverse Modification Analysis

2.7.1 Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the action area without the consequences to the listed species caused by the proposed action, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines all consequences to listed species that are caused by the proposed federal action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of the listed species.

2.7.2 Adverse Modification Determination

Section 7(a)(2) of the Act requires that federal agencies insure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. A final rule revising the regulatory definition of “destruction or adverse modification” (DAM) was published on August 27, 2019 (84 FR 44976). The final rule became effective on October 28, 2019. The revised definition states:

“*Destruction or adverse modification* means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.”

The DAM analysis in this biological opinion relies on four components: (1) the *Status of Critical Habitat*, which describes the current rangewide condition of the critical habitat in terms of the key components (i.e., essential habitat features, primary constituent elements, or physical and biological features) that provide for the conservation of the listed species, the factors responsible for that condition, and the intended value of the critical habitat overall for the conservation/recovery of the listed species; (2) the *Environmental Baseline*, which analyzes the current condition of the critical habitat in the action area without the consequences to designated critical habitat caused by the proposed action, the factors responsible for that condition, and the

value of the critical habitat in the action area for the conservation/recovery of the listed species; (3) the *Effects of the Action*, which determines all consequences to designated critical habitat that are caused by the proposed federal action on the key components of critical habitat that provide for the conservation of the listed species, and how those impacts are likely to influence the conservation value of the affected critical habitat; and (4) *Cumulative Effects*, which evaluate the effects of future non-federal activities that are reasonably certain to occur in the action area on the key components of critical habitat that provide for the conservation of the listed species and how those impacts are likely to influence the conservation value of the affected critical habitat. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of critical habitat, the Service formulates its opinion as to whether the action is likely to destroy or adversely modify designated critical habitat. The Service's opinion evaluates whether the action is likely to impair or preclude the capacity of critical habitat in the action area to serve its intended conservation function to an extent that appreciably diminishes the rangewide value of critical habitat for the conservation of the listed species. The key to making that finding is understanding the value (i.e., the role) of the critical habitat in the action area for the conservation/recovery of the listed species based on the *Environmental Baseline* analysis.

2.8 Status of the Species and Critical Habitat

2.8.1 Swainson's Hawk

Swainson's hawk is not currently listed under the Act and does not have designated critical habitat. Swainson's hawk breeds throughout western North America, including provinces of Canada and most states west of the Mississippi River (Dechant et al. 2001). It winters in grassland and agricultural habitats from central Mexico to southern South America (Bechard et al. 2020). Swainson's hawk were thought to typically occur in California only during the breeding season (March through September) with the Central Valley population migrating to central Mexico (NBHCP 2003). However, about 30 individual hawks have been known to overwinter in the Sacramento-San Joaquin River Delta for the past 25 years (NBHCP 2003).

Historically, the Swainson's hawk bred throughout California, except in the Sierra Nevada Mountains, the lower Cascade and Trinity Mountains and the northern Coastal Range (Bloom 1980). Currently, the distribution consists of a population in the Central Valley and another in the Great Basin in northeastern California (California Department of Fish and Wildlife 2016). Breeding Bird Survey (bird survey) data indicate that from 1968 to 2015 the California population of Swainson's hawk increased, and Sauer et al. (2017) suggests that populations have been increasing since 1990. However, Sauer et al. (2017) also noted that, although the bird survey data may be useful in determining overall population trends, the inconsistencies in surveys limit the use of the results.

Most Swainson's hawk in the Central Valley nest in riparian woodland cover along drainages (Bloom 1980, Estep 1989, England et al. 1995). Swainson's hawks usually nest in large native trees such as valley oak (*Quercus lobata*), cottonwood (*Populus fremontii*), walnut (*Juglans* sp.) and large willows (*Salix* sp.), and generally do not select nonnative trees. Lone trees, oak woodlands and roadside trees are also commonly used. However, Swainson's hawks may prefer nesting in mature riparian cover (England et al. 1995, Bechard et al. 2020); for example, the majority of Swainson's hawk nests found in Yolo County during one study were located in

riparian cover (Schlorff and Bloom 1984). Home ranges for Swainson's hawk throughout the Central Valley have been found to vary between 6,821 and 8,069 acres, although one study from the Butte Valley revealed a much smaller home range of about 1,000 acres (California Department of Fish and Wildlife 2016).

Nest sites are directly associated with high-quality foraging habitat (Estep 1989). The loss of foraging habitat is recognized as the primary threat to the Swainson's hawk statewide population (California Department of Fish and Wildlife 2016). Swainson's hawks forage in open habitats with abundant small mammal and macroinvertebrate prey. Foraging habitat includes annual grassland and vernal pool complex, as well as open oak savanna. Swainson's hawks also forage in agriculture, especially alfalfa and other low growing row crops and irrigated pasture with abundant prey. Perennial crops, such as vineyards, and tall growing row crops do not provide suitable foraging habitat for the hawks.

The distance between nests in the Central Valley seems to be decreasing, likely due to the sparse distribution of mature stands of riparian forest (Estep 1989). Swainson's hawks tend to only be territorial immediately adjacent to the nest (Dechant et al. 2001), but the hawks require high quality foraging adjacent to nests to support reproduction. Increased competition for foraging habitat near nesting locations may decrease reproductive success of those hawks.

Threats to Swainson's hawks may include the loss, degradation and fragmentation of habitat, pesticide application and crop conversion. Nest trees may be removed by development and infrastructure, such as roads, or habitat may be degraded in riparian areas due to changes in hydrology (California Department of Fish and Wildlife 2016). Foraging habitat may be lost or separated from nesting trees by development, roads and crop conversion to unsuitable agriculture. Although the effect from environmental contaminants on Swainson's hawks in California is unknown, several large-scale mortality events have been noted in Argentina due to the applications of organophosphates and carbamate insecticides on agricultural fields (Goldstein et al. 1996).

2.8.2 California Black Rail

California black rail is not a listed species under the Act, nor does it have designated critical habitat. Black rail are found in small, relatively isolated populations throughout the Americas (Eddleman et al. 1994). Black rail occur in marshes with dense vegetation and can tolerate a wide range in salinity from estuaries to freshwater marshes. Much remains unknown about black rail throughout its distribution due to its secretive and nocturnal nature. Historical distribution is poorly known, and it is difficult to accurately assess population trend in the species, but it has likely declined dramatically with the loss of wetland habitats, although some populations may have stabilized due to protection of wetlands under the Clean Water Act (Eddleman et al. 1994).

The distribution of California black rail may have been more extensive historically, particularly in the Central Valley. California black rail were only known from coastal locations in northern California such as San Francisco Bay and Bodega Bay (Evens et al. 1991), but a population was found in the Sierra Nevada foothills of the Sacramento Valley in 1994 (Aigner et al. 1995). Genetic work shows that the Foothills population is not a recent range expansion and the species has persisted in the foothills undetected (Girard et al. 2010). The rails use densely vegetated,

shallow perennial marshes for foraging and breeding (Richmond et al. 2008). The rails eat primarily seeds and invertebrates, and forage in dense marsh vegetation (Eddleman et al. 1994).

California black rails breed from early March through mid-September (Eddleman et al. 1994). The rails nest over shallow water on the edge of marshes in very dense vegetation (Aigner et al. 1995). The nest may be at water level (0 cm), or may be built up to 46 cm high in vegetation (Flores and Eddleman 1993). It is thought that both parents share incubation and the average clutch size is 3-8 eggs (Eddleman et al. 1994). Incubation lasts no more than 20 days, and the chicks leave the nest shortly after hatching (Flores and Eddleman 1993). It is unknown how long it takes the chicks to reach independence, and average reproductive success is unknown (Eddleman et al. 1994).

California black rails occur in a metapopulation in the Sierra foothills (Richmond et al. 2008, Hall and Beissinger 2017). That is, California black rail occur in patches of suitable habitat in the foothills, and these populations are connected by the dispersal of individuals between populations. Some populations may disappear from a patch of habitat (i.e., local extinction) while other patches of habitat become occupied (i.e., colonization). This dynamic structure constitutes a metapopulation. Rails have greater persistence at marshes that are larger than 0.2 acres, but may use smaller marshes for a few seasons or for dispersal (Richmond et al. 2010). Richmond et al. (2008) found that created marshes were colonized within a year of being created, which suggests there are extensive movements of individuals (Hall et al. 2018).

The primary threat to California black rail is the loss and fragmentation of habitat. Although capable of dispersing across large distances (Girard et al. 2010, Risk et al. 2011), most individuals appear to be residents and are non-migratory (Hall et al. 2018). The shallow marshes they depend on may be lost to development and changes in hydrology. The loss of small marshes distributed throughout the landscape may affect the dispersal of rails within the foothills, and limit the integrity of the metapopulation structure of the Sierra Nevada foothills (Richmond et al. 2008, Richmond et al. 2012). Increased predation and disturbance may occur as development encroaches on extant marshes and free-roaming pets spread into preserved natural areas. Adult rails may be particularly vulnerable to predation and habitat loss from July 1 through August 31 when they become flightless during molt (Eddleman et al. 1994).

2.8.3 Western Burrowing Owl

Western burrowing owl is not a listed species under the Act and does not have designated critical habitat. Burrowing owls inhabit the western United States and Canada, as well as Florida, the Bahamas, and Central America (Poulin et al. 2020). The breeding range of the western burrowing owl (one of two subspecies) extends south from southern Canada throughout most of the western half of the United States and south to central Mexico. In California, owls of the Coastal Range, Sierra Nevada foothills and Great Basin Plateau are considered migratory, appearing only for breeding (California Department of Fish and Wildlife 2008). Both migratory and non-migratory owls occur throughout the Central Valley (Poulin et al. 2020).

The western burrowing owl occurs in grasslands and other open, arid areas with sparse shrub cover (Thomsen 1971, Gervais and Anthony 2003, Poulin et al. 2020). The owls also occur in agricultural landscapes that offer sufficient prey and burrows for roosting and nesting

(Rosenberg and Haley 2004). In agricultural landscapes, western burrowing owls will nest along roadsides, water conveyance structures and by other features along the margins of crops (Rosenberg and Haley 2004, Desante et al. 2007). Nest and roost burrows are commonly excavated by ground squirrels, but dens dug by larger mammals may also be used (Ronan 2002, Trulio and Chromczak 2007). In softer soils, western burrowing owls may dig their own nest sites, and manmade structures (i.e., culverts, under-building space, and rubble piles) may be used (Rosenberg et al. 1998). Nest sites are often associated with nearby perches that are used to look for predators.

Burrowing owls may nest as a single pair or in colonies, usually ranging from four to 10 pairs (Zarn 1974). Most pairs occupy a natal burrow and at least one additional satellite burrow. Clutches contain as many as 14 eggs (Todd and Skilnick 2002, Poulin et al. 2020). Western burrowing owls in California have shown considerable nest site fidelity between breeding seasons, ranging from 32-50 percent in large grasslands, and 57 percent in an agricultural landscape (Ronan 2002, Catlin 2004, Catlin et al. 2005). Western burrowing owls are territorial of their nest and satellite burrows, but will forage communally in adjacent habitat (Poulin et al. 2020). Dispersal distance is highly variable, and can be as great as about 30 miles in juveniles and more than 90 miles in adults (Gervais et al. 2006).

During the breeding season, western burrowing owls forage close to their nest sites, but have been recorded hunting as much as 1.67 miles away (Haug and Oliphant 1990). The diet of owls in California includes arthropods, rodents, birds, amphibians, reptiles and carrion (Thompson and Anderson 1988, Green et al. 1993, Plumpton and Lutz 1993, Gervais et al. 2000, York et al. 2002). California voles (*Microtus californicus*) are a primary prey species and may influence the survival and reproductive success of western burrowing owls (Gervais et al. 2006).

Threats to western burrowing owl include habitat loss and fragmentation, rodent abatement activities and reduction of prey. Breeding and foraging habitat may be lost to development, crop conversion, and levee repair and maintenance. Foraging habitat may be fragmented by roads, which increases the risk of vehicle strikes as burrowing owls tend to fly low to the ground (Poulin et al. 2020). Breeding and foraging habitat can also be fragmented by development and crop conversion. Rodent abatement activities are performed to support agricultural activities and to prevent damage to levees. These activities frequently target fossorial mammals and can reduce habitat suitability for the owls by reducing the availability and development of burrows in otherwise suitable habitat. Rodenticides and other pesticides used in agriculture may reduce prey availability in otherwise suitable foraging habitat. Burrowing owls may also be vulnerable to secondary poisoning through consumption of poisoned target and non-target species.

2.8.4 Tricolored Blackbird

Tricolored blackbird is not a listed species under the Act (Service 2019a) and does not have designated critical habitat. For the most recent comprehensive assessment of the range-wide status of the tricolored blackbird, please refer to the Species Status Assessment for the Tricolored Blackbird (*Agelaius tricolor*) (Service 2019b). Threats evaluated during that review and discussed in the document have continued to act on the species since the 2019 status assessment was finalized, with the loss and fragmentation of nesting and foraging habitat being the most significant effect.

2.8.5 Giant Garter Snake

Giant garter snake is listed as threatened under the Act (Service 1993), and does not have designated critical habitat. For the most recent comprehensive assessment of the range-wide status of the giant garter snake, please refer to the Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*) (Service 2017). No change in the garter snake's listing status was recommended in the recovery plan. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2017 recovery plan was finalized, with loss of habitat being the most significant effect. While there have been continued losses of snake habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

2.8.6 Western Pond Turtle

Western pond turtle is not currently listed under the Act, nor does it have designated critical habitat. The action area is entirely within the range of northwestern pond turtle (Germano and Bury 2001). The range of northwestern pond turtle stretches south to San Francisco Bay and east to Nevada; the southwestern pond turtle is found south of San Francisco Bay (Bury 1970, Ernst et al. 2009).

Western pond turtles occur in rivers, streams, lakes, ponds, wetlands, reservoirs, and brackish estuarine waters (Holland 1994, Jennings and Hayes 1994). Western pond turtles use aquatic habitats for foraging, thermoregulation and predator avoidance. They select aquatic habitats with cover and basking sites, and pond turtles avoid open water that lacks those habitat features (Holland 1994). Both adult and juvenile turtles favor aquatic habitats with deep, slow water and underwater refugia. Aquatic refugia includes rocks, logs, mud, submerged vegetation and undercut areas along banks. Hatchlings are relatively poor swimmers and tend to seek areas with shallow, warm water with no predators and some aquatic vegetation (Holland 1994). Western pond turtles overwinter in both aquatic and terrestrial habitats. In terrestrial overwintering habitat, western pond turtles use burrows in leaf litter or soil (Holland 1994).

Western pond turtles are dietary generalists but prefer live prey (Bury 1986), and can scavenge carrion and browse on plant material. Prey items are ingested in the water, as western pond turtles are unable to swallow in air (Holland 1994). Preferred food items include aquatic insect larvae, crustaceans and annelids. Small vertebrates have been found during gut content analyses, but it is unclear whether these were ingested as prey or carrion (Bury 1986, Holland 1994).

Western pond turtles first breed at 10 to 14 years of age (Stebbins 2003), and most females lay eggs in alternate years. Breeding occurs from May through July. Gravid females usually leave the water to nest on land in the late afternoon or evening, and return to aquatic habitat by morning. Females deposit their eggs in sunny upland habitats, including grazed pastures and agricultural fields. Nests are usually within approximately 90 feet of aquatic habitat (Rathbun et al. 1992), but may be as far as 1,400 feet from water (Jennings and Hayes 1994). Clutch size ranges from four to seven eggs (Germano and Rathbun 2008). Incubation lasts 80 to 100 days, and hatching success has been observed to be approximately 70 percent.

Adult males typically have a higher apparent survival probability than adult females, with skewed sex ratios observed as high as four males to every female (Holland 1991). The most plausible explanation for these observed sex ratios is that females suffer higher rates of predation during nesting attempts (Holland 1991). The rate of scarring on the shell – indicating attempted predation by mammals – is as much as six times greater in females compared with males (Holland 1994). Adults are long lived, the maximum life span being approximately 40 years. Hatchlings and first year juveniles have very low survivorship, approximately 10 to 15 percent; survivorship may not increase significantly until turtles are 4 to 5 years old (Holland 1994). Survivorship increases to at least 95 percent once turtles reach a carapace length of 120 mm (Holland 1994).

Threats to western pond turtles include the loss, degradation and fragmentation of habitat, and introduced predators and competitors. Development, flood control activities and agriculture have reduced and fragmented habitat for pond turtles. Wetlands have been filled to accommodate development, and patches of habitat have been fragmented and possibly isolated by development. Flood control activities such as stream channelization and vegetation removal has degraded potential habitat for the species. Land conversion to agriculture also causes the loss and fragmentation of habitat. Introduced species such as bullfrogs and largemouth bass (*Micropterus salmoides*) may predate on pond turtle hatchlings, and red-eared sliders (*Trachemys scripta elegans*) may compete with and exclude western pond turtles from suitable habitat.

2.8.7 Foothill Yellow-legged Frog

Foothill yellow-legged frog is not currently listed under the Act nor does it have designated critical habitat. The known elevation range of the species extends from near sea level to approximately 6,700 feet above sea level (Stebbins 2003). The current range excludes coastal areas south of northern San Luis Obispo County and foothill areas south of Fresno County, where the species is apparently extirpated (Jennings and Hayes 1994). Foothill yellow-legged frogs require shallow, flowing water in small to moderate-sized streams with at least some cobble-sized substrate (Hayes and Jennings 1986). This habitat is believed to favor oviposition (Fitch 1936), and refugial habitat for larvae and postmetamorphs (Jennings 1988). This species has been found in streams without cobble (Zweifel 1955), but it is not clear whether these habitats are regularly used (Jennings and Hayes 1994). Foothill yellow-legged frogs are usually absent from habitats where introduced aquatic predators, such as fishes and bullfrogs, are present (Hayes and Jennings 1986, Kupferberg 1997).

The foothill yellow-legged frog is a highly aquatic amphibian, spending most its life in or near streams, though frogs have been documented underground and beneath surface objects more than 165 feet from water (Nussbaum et al. 1983). Bourque (2008) reported the movements of radio-tracked frogs being restricted to watercourses, though movement distances were considerably longer than previously reported with mark-recapture techniques. Average distance from water was less than 10 feet, but was as great as 131.2 feet (Bourque 2008). Bourque (2008) documented movements up to 1,896 feet (males) and 23,106 feet (females) during the breeding season. Adult male foothill yellow-legged frogs have high site fidelity during the breeding season and typically occupy small home ranges near breeding sites (Bourque 2008).

Foothill yellow-legged frogs in California generally breed between March and early June (Wright and Wright 1949, Jennings and Hayes 1994). Females deposit egg masses on the downstream side of cobbles and boulders over which a relatively thin, gentle flow of water passes (Fitch 1936, Kupferberg 1996). The timing of oviposition typically follows the period of high-flow discharge from winter rainfall and snowmelt (Jennings and Hayes 1994, Kupferberg 1996). The embryos have a critical thermal maximum temperature of 26 degrees Celsius (Zweifel 1955). After oviposition, a minimum of approximately 15 weeks is required to reach metamorphosis, which typically occurs between July and September (Jennings 1988), and larvae attain adult size in two years (Storer 1925). Foothill yellow-legged frogs select egg laying sites and time egg laying to avoid fluctuations in river stage and current velocity (Kupferberg 1996). This suggests that stable flow and current velocities are important to create suitable reproductive sites for foothill yellow-legged frogs.

Habitat loss and degradation and introduced predators pose continued and increasing threats to the long-term viability of foothill yellow-legged frogs (Jennings and Hayes 1994). Poorly timed water releases from upstream reservoirs can scour egg masses (Jennings and Hayes 1994, Kupferberg et al. 2009), and decreased flows can force adult frogs to move into permanent pools where they may be more susceptible to predation. Davidson et al. (2002) found evidence that airborne agrochemicals play a significant role in the decline of this species. Lind (2005) found changes in land use and use of air-borne toxins contribute to the absence of foothill yellow-legged frogs in areas where they had previously been documented. Kupferberg (1997) found that bullfrogs disrupted aquatic community structure and negatively affected foothill yellow-legged frog populations in northern California. Interspecific matings between male yellow-legged frogs and female bullfrogs have been observed; these interactions with non-native bullfrogs likely reduce the reproductive output of foothill yellow-legged frog (Lind et al. 1996). Furthermore, centrarchid fishes eat frog eggs (Werschkul and Christensen 1977) and, where introduced into foothill streams, may contribute to the extirpation of foothill yellow-legged frogs (Morey 2000).

2.8.8 California Red-legged Frog

California red-legged frog is listed as threatened under the Act (Service 1996). Critical habitat for California red-legged frog was designated in 2006 (Service 2006a) and revised in 2010 (Service 2010). In the revision of critical habitat, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Service 2010).

For a complete description of the life history and status of the species, please see the Recovery Plan for the California Red-legged frog (*Rana aurora draytonii*) (Service 2002). The recovery plan identifies eight recovery units, and within each recovery unit, delineates core areas that represent contiguous areas of moderate to high California red-legged frog densities. The establishment of these recovery units is based on the determination that various regional areas of the species' range are essential to its survival and recovery. These recovery units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of the species' range. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit.

Habitat loss and fragmentation, urban encroachment and introduced non-native species are the primary threats to California red-legged frog throughout its range. Aquatic habitat has been lost

to development, agriculture, and repair of levees and irrigation structures. Suitable aquatic habitat may be fragmented by development, infrastructure and agriculture such that breeding populations become isolated. Urbanization of California red-legged frog habitat has also affected the species. Declines are attributed to channelization of riparian areas, enclosure of channels by urban development, and introduction of predatory fishes and bullfrogs. The decline and even eventual extirpation of California red-legged frogs has been documented in systems supporting bullfrogs (Jennings and Hayes 1990, Twedt 1993), red swamp crayfish (*Procambarus clarkia*), signal crayfish (*Pacifastacus leniusculus*), goldfish (*Carassius auratus*), common carp (*Cyprinus carpio*) and mosquito fish (*Gambusia affinis*) (Fisher and Shaffer 1996). Disease, such as *Chytridiomycosis* and ranaviruses, may also pose a significant threat as they have been found to adversely affect other amphibians (Davidson et al. 2003, Lips et al. 2006). While these threats to California red-legged frog continue, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

2.8.9 Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle is listed as threatened under the Act and has designated critical habitat (Service 1980). For the most recent comprehensive assessment of the range-wide status of the beetle, please refer to the Revised Recovery Plan for the Valley Elderberry Longhorn Beetle (Service 2019c). Threats discussed in the recovery plan continue to act on the beetle, with loss of habitat being the most significant effect. While there have been continued losses of habitat for valley elderberry longhorn beetle, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

2.8.10 Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp is listed as threatened under the Act (Service 1994), and critical habitat was designated in 2006 (Service 2006b). For the most recent comprehensive assessment of the range-wide status of the vernal pool fairy shrimp, please refer to the Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) 5-year Review: Summary and Evaluation (Service 2007a). No change in the vernal pool fairy shrimp's listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2007 5-year review was finalized, with loss of habitat being the most significant effect. While there have been continued losses of fairy shrimp habitat throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

2.8.11 Vernal Pool Tadpole Shrimp

Vernal pool tadpole shrimp is listed as endangered under the Act (Service 1994), and critical habitat was designated in 2006 (Service 2006b). For the most recent comprehensive assessment of the range-wide status of the vernal pool tadpole shrimp, please refer to the Vernal Pool Tadpole Shrimp (*Lepidurus packardii*) 5-year Review: Summary and Evaluation (Service 2007b). No change in the vernal pool tadpole shrimp's listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2007 5-year review was finalized, with loss of habitat being the most significant effect. While there have been continued losses of tadpole shrimp habitat

throughout the various recovery units, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

2.8.12 Conservancy Fairy Shrimp

Conservancy fairy shrimp is listed as endangered under the Act (Service 1994), and critical habitat was designated in 2006 (Service 2006b). For the most recent comprehensive assessment of the range-wide status of the conservancy fairy shrimp, please refer to the Conservancy Fairy Shrimp (*Branchinecta conservatio*) 5-year Review: Summary and Evaluation (Service 2012). No change in the conservancy fairy shrimp's listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2012 5-year review was finalized, with loss of habitat being the most significant effect. While there have been continued losses of conservancy fairy shrimp habitat, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

2.8.13 Critical Habitat

2.8.13.1 Vernal Pool Fairy Shrimp

Critical habitat was designated for vernal pool fairy shrimp in 2005, and revised in 2006 (Service 2006b). The Service designated 597,821 acres of critical habitat for vernal pool fairy shrimp in 35 units throughout their range. The primary constituent elements of the critical habitat are as follows:

1. Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools described below in (2), 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 for a minimum of 18 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands;
3. Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and
4. Structure within the pools described above in paragraph (2), consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter.

2.9 Environmental Baseline

Environmental baseline refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical

habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or 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 which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

2.9.1 General Baseline

In western Placer County, the elevation ranges from approximately 40 feet above sea level on the Sacramento Valley floor up to 2,300 feet above sea level in the Sierra Nevada foothills north of Auburn. The valley floor has extensive areas of agricultural uses, as well as urban and suburban development along I-80 and State Route 65. Plan Figure 2-2 and Plan Table 2-1 show the present pattern and extent of urban and agricultural use. Natural vegetation that still exists in the valley generally consists of grasslands, vernal pool complexes within a grassland matrix, and riparian woodlands. The foothills in the northeastern and eastern parts of the Plan are dominated by rural-residential land use, woodlands, orchards, and grazing land.

The transition from the Sacramento Valley to Sierra Nevada foothills, which occurs roughly along the 200-foot elevation line, is reflected by differences in land use, ecology, and the distribution of natural communities and Covered Species. For this reason, the Plan Area is divided into three main subareas:

- The Valley (approximately 100,500 acres) consists of urban and suburban areas in Lincoln and unincorporated areas surrounded by agricultural uses and natural grassland and vernal pool complexes.
- The Foothills (approximately 109,000 acres) are characterized by lower-density suburban and rural-residential development along the I-80 corridor (approximately 41,000 acres) and lower-density rural-residential development, grazing land, and natural woodland communities in the North Foothills (approximately 68,000 acres).
- The non-participating cities' jurisdiction (approximately 50,600 acres) is mainly already in urban and suburban use.

The Plan uses natural communities, land-cover types, and constituent habitats to classify and describe the biological setting of the Plan Area. Natural communities are comprised of groups of similar land cover types, and constituent habitats are specific habitat features within land cover types. Because the species habitat models used in the Plan (see Appendix D of the Plan) are based on land cover mapping and estimates of constituent habitats, this Biological Opinion also relies heavily on these classifications. The baseline for each Covered Species below includes a description of the baseline condition of modeled habitat for that species in the action area.

Plan Table 3-6, *Communities and Land-cover Types* and Plan Table 3-7, *Habitat Constituents and their Primary Associated Community Types* lists natural communities, land-cover types, and constituent habitats. Plan Section 3.4, *Plan Area Communities* provides descriptions of each land

cover type and associated constituent habitats. A brief summary of each natural community (and associated land cover types) that provides habitat for Covered Species is included below; See Plan Section 3.4, *Plan Area Communities* for a full description.

See Plan Table 3-13, *Acres of Communities and Land-cover Types* for acreages of each land cover type currently mapped within Plan Area A, and Plan Figure 3-11, *Communities* for the location and distribution of natural communities in Plan Area A. Plan Table 3-14, *Estimated Acres of Constituent Habitats in Plan Area A Extrapolated from Survey Results* shows the estimated amount of each constituent habitat within Plan Area A.

Grassland. The grassland natural community includes annual grassland and pasture land cover types. In western Placer County, annual grasslands occur naturally at the lower elevations (generally below 300 feet). Annual grasslands in the Valley are dominated by non-native grasses and forbs, with few trees. In the Valley, there are still a few remnant examples of native grasslands, often found around the edges of wetlands or moist bottomlands. Foothill grasslands are mostly open annual grassland–oak woodland/savanna with widely scattered blue oaks (*Quercus douglasii*), interior live oaks (*Quercus wislizenii*), and valley oaks (*Quercus lobata*). Annual grasslands occur in the understory of open mixed oak, blue oak, interior live oak, and valley oak woodlands, in openings in oak–foothill pine woodland and foothill chaparral land-cover types. Where tree canopy exceeds an estimated 5 percent, land cover was mapped as savanna. Areas mapped as pasture show more extensive terrain modification to accommodate irrigation and from mechanical tilling for planting. Irrigated pastures occur throughout western Placer County.

Vernal Pool Complex. Although vernal pool complex can also function as annual grassland, it is defined as a separate community to focus on habitat for covered vernal pool species. Vernal pools form in seasonally flooded depressions in annual grasslands under a combination of specific climatic, soil, hydrologic, and topographic conditions. Although vernal pool complex contains the vast majority of vernal pool constituent habitats (vernal pools, seasonal wetland in vernal pool complex, and seasonal swales; see Plan Section 3.4.3.2, *Constituent Habitats* for a complete description of each of these), vernal pool constituent habitats may also occur in other land cover types. Land cover in vernal pool complex is categorized as high, intermediate, and low density (see Plan Section 3.4.3.1, *Land Cover Types* for a description of each of these categories). Also, see Plan Figure 3-13, *Grassland and Vernal Pool Complex* for locations of each of these cover types, and Plan Table 3-16, *Relative Disturbance in each Vernal Pool Complex Cover type* for acreages. A significant loss of vernal pool habitat has occurred throughout the Central Valley; based on mapping conducted in 1994 and 2005, Placer County experienced some of the greatest losses documented during that time period (Holland 2009).

Aquatic/Wetland Complex. The aquatic/wetland community includes marsh complex and pond land cover types. Marsh complex includes mosaics of wetlands and uplands found around perennial water. The pond land-cover type represents small patches of open water. Ponds in the action area typically occur on relatively flat land and are shallow, with a perimeter that expands or contracts substantially based on the water depth. This variable fringe of the pond creates conditions that allow the formation of marsh complex. Because of the close spatial and ecological relationship between ponds and marsh complex they are included together in the aquatic/wetland complex community. Marsh habitat has decreased dramatically in the

Sacramento Valley and Placer County since the turn of the century due to drainage and conversion to agriculture.

Riverine/Riparian Complex. Riverine and associated riparian complex includes a mosaic around the streams and rivers in the action area. This mosaic is mapped as a single riverine/riparian complex land-cover type, which also defines the natural community (see Plan Figure 3-14 and Plan Table 3-12). Riverine/riparian complex is strongly associated with riverine and riparian constituent habitats. Riverine systems occurring in western Placer County include perennial, intermittent, and ephemeral streams. Riparian constituent habitat includes riparian woodland or stands of deciduous trees near perennial streams as well as herbs, forbs, and shrubs that occur in the riparian corridor without a woodland overstory. Prior to 1900, riverine habitat was highly altered by dams, impoundments, water diversions and hydraulic mining debris. Riverine systems in the action area have been further altered by road crossings, culverts, authorized and unauthorized water diversions, channelization, flood control projects, the loss of riparian vegetation, and increased rates of sedimentation. Development, water diversions, grazing, flood control activities, cultivated agriculture, and aggregate mining, have reduced the extent of riparian habitat.

Oak Woodland. The oak woodland community occurs mainly in the Foothills and includes various dominant tree species represented by five woodland land-cover types including, blue oak woodland, interior live oak woodland, mixed oak woodland, oak-foothill pine woodland, oak savanna, foothill chaparral, and rock outcrop. Losses of oak woodlands have occurred as a result of clearing for range improvements and agriculture, reduction in oak regeneration as a result of fire suppression and introduction of non-native grasses, and due to rural residential development.

Valley Oak Woodland. Valley oak woodland was delineated where valley oak represents greater than 30 percent of canopy cover (where it was possible to make this distinction by aerial photograph interpretation or field assessments). Oak woodlands dominated by valley oak, but with less than 30 percent canopy cover were mapped as oak woodland savanna land cover. Valley oak associated with perennial streams was mapped as riparian land cover. Although valley oak woodland was once more widespread in the action area, few large stands still exist and most remaining valley oaks occur along stream corridors and floodplains with other tree species.

Rice and Field Agriculture. The rice community includes fields that are under current cultivation and fields that are temporarily fallow but have water control structures in place. Rice fields are flooded in the spring and often again after harvest to control pests and to provide waterfowl habitat for hunting clubs. Rice is grown as a monoculture and remaining vegetation is generally confined to the berms, ditches, and canals between and around fields and is dominated by wetland plants, both native and non-native. Rice fields cover approximately 19 percent of the Valley in the Plan Area A. The field agriculture community includes alfalfa, row crops (e.g., grain and vegetables), and eucalyptus (because groves have frequently been planted as wind breaks between fields).

2.9.2 Swainson's Hawk

The action area is on the eastern edge of the Swainson's hawk distribution in the Sacramento Valley, and supports a relatively low density of Swainson's hawks. There are 18 records for Swainson's hawk in the action area from in the California Natural Diversity Database (California Natural Diversity Database 2019) mainly in the Valley portion of the action area where most remaining foraging habitat occurs. Nests are located in riparian woodlands, in valley and blue oaks, willows and, rarely, eucalyptus near foraging habitat. Most of the recorded nest sites in the action area are located within the Reserve Acquisition Area and no active nests have been documented within the Potential Future Growth Area since 2003 (California Natural Diversity Database 2019).

Development and crop conversion in the Valley have removed potential breeding and foraging habitat, as well as fragmenting those habitats. Elsewhere in the Sacramento Valley, alfalfa, tomato, and other similar crops provide the primary foraging habitat for Swainson's hawk (Estep 1989). However, because rice is the most common type of agriculture in the action area, these types of agricultural crops occur only in small amounts. Therefore, foraging habitat for Swainson's hawk within the action area is primarily grassland habitats (e.g., vernal pool complex grassland, annual grassland, pasture and irrigated pasture).

Species Habitat Model. Swainson's hawk modeled nesting habitat includes riverine/riparian, valley oak woodland, and eucalyptus land-cover types below 200 feet in elevation. Swainson's hawks typically nest in large trees, which are components of these land cover types. Isolated trees or small patches of trees that provide suitable nesting habitat may also be present in other land cover types, but are too small to be captured by a landscape-scale habitat model. Most Swainson's hawk modeled nesting habitat in the action area is located within the Stream System. Modeled foraging habitat for Swainson's hawk includes vernal pool complex, annual grassland, pasture, alfalfa and cropland land cover types below 200 feet elevation in the action area. There are 1,968 acres of modeled nesting habitat and 54,574 acres of modeled foraging habitat for Swainson's hawk in the action area.

2.9.3 California Black Rail

Prior to the discovery of the Sierra Nevada foothills population of California black rail in 1994 (Aigner et al. 1995), black rails were not known to occur in the Sierra foothills. Since their discovery in the foothills, black rails have been detected in more than 200 wetlands and marshes in the eastern foothills of the Sacramento Valley. California black rails are residents in the action area and occupy perennial wetlands that are dominated by rushes and cattails. There are 10 occurrences of the black rail in the action area, all of which are east of State Route 65. The core area of the Sierra foothills black rail metapopulation is north of the action area in Yuba County, and the action area may help maintain connectivity between black rails in the foothills and the San Francisco Bay-Delta. Due to the recent discovery of the species in the action area, its historical abundance and distribution are unknown and it is not known how the rail may have been affected by previous land conversion. Development and agriculture may have removed or isolated suitable wetlands.

Species Habitat Model. Suitable habitat for California black rail is modeled as fresh emergent wetlands greater than 0.2 acres. Black rails occur in fresh emergent marshes year-round, and may occur throughout the action area. There are 1,112 acres of modeled habitat within the action area.

2.9.4 Western Burrowing Owl

The action area supports a small non-breeding population of western burrowing owl and at least one breeding pair. The action area is on the eastern periphery of the owl's distribution in the Central Valley, and suitable habitat only occurs in the western part of the action area.

There are seven occurrences of western burrowing owl from the valley portion of the action area (California Natural Diversity Database 2019). Most of the occurrences are of wintering owls, but one breeding pair has been documented at Swainson's Preserve where fledglings have been observed. The action area may have unoccupied suitable breeding habitat that could support additional breeding pairs.

Development, infrastructure (i.e., roads), crop conversion and flood control activities have removed and fragmented habitat for the species within the action area and may have affected the abundance and distribution of owls within the action area. Conversion to incompatible crops has reduced the available foraging habitat. Flood control activities, such as levee repairs, remove burrows that provide shelter and nesting locations. Roads that fragment foraging habitat may also increase vehicle strikes of foraging owls.

Species Habitat Model. Western burrowing owl modeled year-round habitat includes valley oak woodlands, oak woodland savanna, vernal pool complex, annual grassland, alfalfa, pasture and cropland below 200 feet in elevation. While all of these land cover types were included as suitable habitat, only areas that are sparsely vegetated, have fossorial mammals, and support sufficient prey may support owls. Therefore, the amount of modeled habitat in the action area is an overestimate of suitable habitat, but modeled habitat includes all of the areas where these site-specific features may be present, or could be present in the future. There are 55,101 acres of suitable habitat in the action area.

2.9.5 Tricolored Blackbird

As of 2014, Placer County supported an estimated 12 percent of the statewide tricolored blackbird breeding population (Meese 2014). Tricolored blackbirds consistently nest and winter in the action area. The action area is important for late season nesting attempts when blackbirds disperse from colonies in the San Joaquin Valley to nest in the Sacramento Valley and may also provide connectivity within the Central Valley, and between the peripheral Nevada breeding colony and the core population (Service 2019b).

Approximately five to six tricolored blackbird colonies are known to breed within the action area, and 21 nest colony sites that may or may not be occupied in a given year or breeding attempt have been documented in Plan Area A. Fifteen of these 21 sites are active or recently active; of these 15 sites, six are in the Reserve Acquisition Area, three or four are protected in existing reserves, and five are within the Potential Future Growth Area. About 12,000 to 18,000 blackbirds have bred in the action area recently during statewide surveys (Service 2019b). A

large mixed-species flock of blackbirds also winters in the action area at Yankee Slough, several thousand of which are estimated to be tricolored blackbirds.

Tricolored blackbirds in the action area primarily nest in Himalayan blackberry (*Rubus armeniacus*) and in cattail marshes in stock ponds. Development, agriculture and flood control activities may have limited the available suitable habitat for tricolored blackbirds in the action area. Development has removed and fragmented suitable wetland habitat. Agriculture has also removed, fragmented and degraded habitat, including potentially reducing prey availability in foraging habitat through pesticide use. Flood control activities have changed the hydrology of the action area such that some wetlands may now be ephemeral and may not support the vegetation and/or open water that tricolored blackbirds require for nesting. These impacts may have resulted in nesting habitat being located further from high quality foraging habitat in the action area.

Species Habitat Model. Tricolored blackbird modeled nesting habitat is the marsh complex land cover type below 300 feet in elevation, and foraging habitat includes annual grasslands, vernal pool complex, pasture, alfalfa and cropland below 300 feet elevation. Tricolored blackbirds typically nest in cattails and Himalayan blackberry either in marshes or within 1,500 feet of open water. While those site characteristics are too small to be captured in the land cover data, the marsh complex cover type should capture wetlands that could, at some time during the proposed permit term, support a nesting colony. As tricolored blackbirds breed and winter in Placer County, they forage in a variety of habitats (e.g., annual grassland, pasture and cropland) throughout the county depending on the time of year and food availability. There are 633 acres of modeled nesting habitat and 60,974 acres of modeled foraging habitat in the action area.

2.9.6 Giant Garter Snake

There are no documented occurrences of giant garter snake in the action area. However, a population of giant garter snake occurs approximately 1.5 to 5 miles to the west and south of the Placer county line. The action area is within the historical range of wetlands in California and may have supported the garter snakes prior to loss of wetlands. The western portion of the action area is within the eastern edge of the American Basin Recovery Unit for giant garter snake; the portion of the recovery unit within the action area includes the Nicolaus and Natomas Basin Management Units (Service 2017).

There are 19 occurrences of giant garter snake within five miles of the action area, and there is dispersal habitat (e.g., irrigation canals) connecting occupied habitat to habitat within the action area. Suitable wetland and rice habitat is present on the western portion of the action area. Several locations within this area are used for growing rice, and the associated agricultural ditches and wetlands/sloughs containing emergent vegetation in conjunction with suitable adjacent upland habitat could provide habitat for giant garter snake during both the active and inactive seasons.

Loss of wetlands and development have removed and fragmented habitat for giant garter snake in the action area. Maintenance of flood control and agricultural waterways, weed abatement, and rodent control can degrade remaining habitat.

Species Habitat Model. Modeled aquatic habitat for the giant garter snake includes aquatic/wetland complex, rice and riverine/riparian land cover types below 100 feet in elevation. Within the riverine/riparian land cover, only small low-gradient streams, tributaries and canals, which provide dispersal and movement habitat, are included as modeled habitat. Aquatic habitat must have emergent vegetation for foraging, predator evasion, and to facilitate thermoregulation. Upland habitat includes annual grassland, pasture, alfalfa, vernal pool complex and cropland land cover types within 200 feet of the aquatic modeled habitat. During their active period, giant garter snakes require upland habitats adjacent to aquatic habitat for basking and refuge. In the winter, giant garter snakes need upland habitat for winter hibernacula to avoid winter flooding. There are 19,511 acres of modeled aquatic habitat, and 3,537 acres of upland habitat in the action area.

2.9.7 Western Pond Turtle

Western pond turtles were known to occur in habitat throughout the American River drainage, including within the action area (Service 1999), and it is believed they were historically abundant when this area supported extensive wetlands (Hayes et al. 1999). It is probable that the population has declined from historical numbers with the loss of wetlands to agriculture and development.

Western pond turtles are known to occur within the action area as well as in adjacent counties. Western pond turtles are known from four occurrences in the action area (California Natural Diversity Database 2019). All four occurrences are from the foothills portion of the action area; three of the occurrences are from locations on Raccoon Creek in Hidden Falls Park. Pond turtles have been found in ponds, marshes, streams and in the uplands near suitable aquatic habitat.

Conversion of former wetlands to agricultural lands and development have reduced and fragmented habitat for western pond turtles in the action area. Agricultural activities, development, and flood control activities continue to remove, degrade and fragment remaining habitat for the species.

Species Habitat Model. Modeled habitat for western pond turtle includes both aquatic and upland habitats. Aquatic modeled habitat includes aquatic/wetland and riverine/riparian land cover, while upland (nesting) habitat includes all land cover types within 150 feet of the modeled aquatic habitat, except urban/rural and all agriculture land cover types. Western pond turtles are found in a variety of aquatic habitats that have heterogeneous structure that provides food, shelter and basking locations. Pond turtles require upland habitat for nesting and overwintering habitat. Pond turtles may use any adjacent habitat type except for highly disturbed communities such as urban, rural and agriculture. There are 10,244 acres of modeled aquatic habitat and 14,263 acres of modeled upland habitat in the action area.

2.9.8 Foothill Yellow-legged Frog

There is limited information on the historical occurrence of the foothill yellow-legged frog in Placer County. Although there are numerous records of foothill yellow-legged frog in the foothills of Placer County outside the action area, there are no historical or current records of

foothill yellow-legged frog within the action area. The nearest extant occurrence is approximately 2.5 miles east of the eastern edge of the action area.

Within the action area, there is limited suitable habitat for foothill yellow-legged frog; a habitat assessment found that the upper reaches of Raccoon Creek provides the most suitable habitat for foothill yellow-legged frog in the action area, although the portion of the Bear River may also provide some potentially suitable habitat. In addition, a few streams within other watersheds in the action area may have potentially suitable habitat for foothill yellow-legged frog, although it is generally limited in extent and isolated from other potential stream areas.

Changes in hydrology caused by flood control activities, development and agriculture have impacted perennial streams to a degree that some streams no longer provide suitable habitat for foothill yellow-legged frog. Development and associated infrastructure, such as roads, in the action area have fragmented and degraded stream habitat in the action area. Application of pesticides in developed areas or for agricultural purposes may also degrade habitat for foothill yellow-legged frog.

Species Habitat Model. Modeled habitat for foothill yellow-legged frog is riverine/riparian land cover above 500 feet in elevation, specifically stream systems and riverine habitat. Foothill yellow-legged frogs require perennial aquatic habitat year-round, and generally do not move far from water. Foothill yellow-legged frogs are usually found in moving water or occasionally larger pools that persist throughout the dry season. There are 1,837 acres of modeled habitat in the action area.

2.9.9 California Red-legged Frog

Only a limited number of isolated populations of California red-legged frog persist in the Sierra Nevada foothills (Barry and Fellers 2013) and the species is no longer considered extant in the Central Valley due to significant declines caused by habitat modifications and exotic species (Fisher and Shaffer 1996). Elimination of the species from the valley floor may have isolated the Sierra Nevada foothill populations as foothill populations may have depended on immigrants from the valley floor. Currently, only a few drainages in the foothills of the Sierra Nevada are known to support the species.

Of the eight recovery units identified in the recovery plan for California red-legged frog (Service 2002), portions of two recovery units, the Sierra Nevada Foothills and the North Coast Foothills and Western Sacramento recovery units, are within the action area. The action area also includes designated critical habitat for California red-legged frog, but only Plan Area B5 (an approximately 50-acre area located about 21 miles east of Plan Area A) is within California red-legged frog critical habitat; Plan Area B5 falls entirely within Big Gun Conservation Bank.

Within the action area, California red-legged frog is only known to occur at Big Gun Conservation Bank located in Plan Area B5. Big Gun Conservation Bank is located within the Sierra Nevada Foothills recovery unit and within designated critical habitat for California red-legged frog. Additional occurrences outside of the action area are known from surrounding Tahoe National Forest and Bureau of Land Management lands as well as one occurrence near Ralston Ridge. There is potentially suitable habitat throughout the action area, but, because

California red-legged frog is extirpated from the Central Valley, any newly discovered occurrences of California-red-legged frog would likely only be in the foothills portion of the action area.

Habitat suitable for California red-legged frogs in the action area includes streams and ponds, and adjacent habitats where frogs can shelter, forage and disperse. Development and infrastructure (i.e., roads) may have fragmented and degraded habitat for California red-legged frog in the action area. Agricultural activities that result in the fill of wetlands and degradation of aquatic habitat may also have fragmented and degraded potentially suitable habitat.

Species Habitat Model. Modeled habitat for California red-legged frog includes both aquatic and upland habitats. The aquatic habitat is used for breeding and foraging, while upland habitat provides refugia and dispersal habitat. Aquatic/wetland complex, riverine/riparian and urban wetland land-cover types are modeled aquatic habitat for California red-legged frog. Upland land-cover types include oak woodland, annual grassland, pasture, cropland, alfalfa and riparian woodlands within one mile of modeled aquatic habitat. There are 8,532 acres of modeled aquatic habitat and 75,306 acres of modeled upland habitat in the action area.

2.9.10 Valley Elderberry Longhorn Beetle

The Action Area is located within the Sacramento River Management Unit described in the Revised Recovery Plan for Valley Elderberry Longhorn Beetle (Service 2019c). The revised recovery plan sets recovery criteria by Hydrologic Unit Code (HUC) in 8 sub-basins within each management unit. The following HUC 8 sub-basins are located within the action area and have recovery criteria for the number of suitable habitat patches that would need to be protected within each: Upper Bear River (5 patches), Upper Coon- Upper Auburn (1-5 patches), Lower American River (5 patches), and North Fork American River (1-5 patches). No designated critical habitat for valley elderberry longhorn beetle occurs within the action area,

There are twelve documented occurrences of the beetle in the action area from three HUC-10 watersheds: the American River, Dry Creek, and Bear River. However, there have not been comprehensive surveys for the beetle or for elderberry shrubs in the action area, and there may be additional occupied patches of habitat. Known occurrences of valley elderberry longhorn beetle include: in the American River watershed below Auburn in the vicinity of Folsom Lake; in the Dry Creek watershed along Secret Ravine, Miners Ravine, and Raccoon Creek; at the Wildlands Sheridan Mitigation Bank; and in the Bear River watershed near Wheatland in Sutter County. Beetle occurrences in the action area may be isolated from each other due to the beetle's limited dispersal ability and fragmented riparian habitat where elderberry shrubs are found. However, limited data suggest that beetles appear to persist in locations that are occupied (Holyoak and Koch-Munz 2008).

The main threat to valley elderberry longhorn beetle in the action area is the loss and degradation of its habitat. The invasive Argentine ant has also been identified as a threat to the beetle. Argentine ants may attack and consume beetle eggs and larvae and potentially interfere with adult behavior. The range of Argentine ants in the Central Valley is likely to expand unless methods of successful control become available (Service 2019c). Threats such as pesticide use, climate change, and invasive plants may also threaten the valley elderberry longhorn beetle.

Species Habitat Model. Modeled habitat for the valley elderberry longhorn beetle includes the valley oak woodland and riverine/riparian land cover types below 650 feet in elevation. The host plant of the beetle is elderberry, which typically occurs in riparian forests and within oak woodlands. Individual elderberry shrubs are too small to map individually; therefore, modeled habitat includes the two land cover types that typically support the shrubs. There are 6,367 acres of modeled habitat in the action area.

2.9.11 Vernal Pool Fairy Shrimp

The action area is located within the Southeastern Sacramento Valley Vernal Pool Region and encompasses the Western Placer County Core Area described in the Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005). Designated critical habitat for vernal pool fairy shrimp occurs in the action area (see Section 2.9.14.1 below). The Southeastern Sacramento Valley Vernal Pool Region includes portions of Yuba, Nevada, Placer, Sutter, Sacramento, El Dorado, San Joaquin, Amador, and Calaveras Counties (Service 2005). Northern Hardpan vernal pools are the most common in the Southeastern Sacramento Valley Vernal Pool Region, but a few Northern Volcanic Mudflow vernal pools occur in Placer County (Service 2005). Vernal pool habitats throughout the California Central Valley have been mapped several times, beginning in the 1970's and most recently using aerial mapping in 2005 (Holland 2009). Placer County included just 5% of the total area of vernal pool grassland mapped in the Central Valley in 2005 (Holland 2009). Of the vernal pool grassland mapped in Placer County in 1994, about 35 percent had been lost by 2005. Most of this loss was due to urban development (approximately 88 percent), and some agricultural conversion (approximately 12 percent) (Holland 2009).

The Western Placer County Core Area stretches across the central part of the action area. The Western Placer County Core Area is east of the rice agriculture that is prevalent along the western edge of the County, and west of the Foothills. The core area covers approximately 31,000 acres, almost all of which is in Placer County. There is a small, 90-acre portion of the core area that extends into northwestern Sacramento County. Much of the core area is within Plan Area A, but approximately 5,200 acres is located within Plan Area B. While some parcels have been developed or converted into incompatible agriculture, there are some relatively large areas of extant vernal pool habitat with documented occurrences of vernal pool fairy shrimp within or near the core area (Service 2007a). The western edge of Placer County is primarily in rice production and no longer contains substantial vernal pool habitat. A recovery goal from the Vernal Pool Ecosystem Recovery Plan (Service 2005) is the protection of at least 85 percent of the Western Placer County Core Area.

There are 63 California Natural Diversity Database records of vernal pool fairy shrimp in the action area (California Natural Diversity Database 2019); some of these occurrences likely represent the same populations. Most documented occurrences are located in the Valley portion of the Plan Area in vernal pools of the northern hardpan and north volcanic mudflow types (see Appendix D of the Plan for locations of documented occurrences). However, most vernal pool habitat in the action area has not been surveyed for vernal pool fairy shrimp, and the number of occupied vernal pools in the action area is unknown. Within the action area, most surveys for the species have been conducted on parcels proposed for urban development or sites proposed as

mitigation for urban development, which biases the distribution of records towards those areas that have been targeted for surveys.

One of the largest threats to vernal pool fairy shrimp within the action area is habitat loss and fragmentation. The cities of Roseville and Lincoln are in an area noted for having relatively high densities of vernal pools (Service 2007a) and urban growth in this area has resulted the loss and fragmentation of important high-density vernal pool habitat. Agricultural activities in the action area have also degraded and fragmented vernal pool habitat, particularly in the western portion of the County. Vernal fairy shrimp are also threatened by the encroachment of non-native annual grasses and altered hydrology (Service 2007a). Non-native grasses maintain dominance at pool edges, sequestering light and soil moisture, promoting thatch build-up, and shortening inundation periods (Service 2007a).

Western Placer County has numerous existing open-space, wetland mitigation, and other preserves. Approximately 8,700 acres of vernal pool complex have been preserved throughout western Placer County, of which approximately 5,400 acres are within the Western Placer Core Area. There are multiple sites within the action area that are protected for the benefit of vernal pool species, including the Orchard Creek Vernal Pool Conservation Bank, Twelve Bridges Preserve, Sheridan Conservation Bank, and Yankee Slough Conservation Bank. The U.S. Air Force's Lincoln Communication Facility, which is part of the McClellan Air Force Base, is now part of the 220-acre Western Placer Schools Conservation Bank (Service 2007a).

Species Habitat Model. Modeled habitat for vernal pool fairy shrimp is vernal pool complex land cover type. Fairy shrimp occur and persist in vernal pools and other aquatic features that have the correct microhabitat characteristics and hydroperiod to support the species. Individual pools that have the features to support fairy shrimp cannot be mapped on a landscape scale and, consequently, the modeled habitat may overestimate the amount of habitat that has the microhabitat necessary to support the species.

There are 2,230 acres of modeled vernal pool constituent habitat and 44,278 acres of modeled vernal pool complex in the action area. The Plan categorized vernal pool complex as either having high, medium or low density of vernal pool constituent habitats (see Plan figure 3-13 for locations and Plan Section 3.3.1.2.4 for additional details). High-density vernal pool complex is defined as having a greater than 5 percent density of vernal pool constituent habitat; intermediate density vernal pool complex has between 1 and 5 percent vernal pool constituent habitats; and low density vernal pool complex is less than 1 percent vernal pool constituent habitat. The Plan also characterized vernal pool complex land by three levels of disturbance: minimal, moderate, and high disturbance. Disturbance is primarily from past agricultural uses such as disking or overgrazing. Nearly half (49.6%) of the extant vernal pool complex in the action area has had minimal disturbance.

2.9.12 Vernal Pool Tadpole Shrimp

Vernal pool tadpole shrimp and vernal pool fairy shrimp can co-occur in vernal pool constituent habitat and recovery goals for these species are addressed together in the recovery plan. Therefore, the description of the Southeastern Sacramento Valley Vernal Pool Region and Western Placer County Core Area as well as descriptions of vernal pool habitat and associated

threats provided above for vernal pool fairy shrimp also apply to vernal pool tadpole shrimp. No designated critical habitat for vernal pool tadpole shrimp is located within the action area.

The historical distribution of vernal pool tadpole shrimp in the action area is not known, but is thought to have been patchy. The action area likely represents the eastern edge of their distribution. There are only four known populations of vernal pool tadpole shrimp in the action area, although they may occur at additional locations that have not been surveyed. Vernal pool tadpole shrimp occur in greater numbers in counties to the north, south and west of the action area. The greatest concentration of known populations is located to the south of the action area within the vernal pool complexes of Sacramento County (Service 2005).

Within the action area, one occurrence of tadpole shrimp is on an established conservation bank, one has been extirpated by development, and two are threatened by development. Tadpole shrimp require turbid pools with a particularly long hydroperiod, which may be uncommon in the action area. Urban development and agriculture may have fragmented tadpole shrimp habitat and isolated populations. These isolated populations may have been more vulnerable to stochastic events.

Species Habitat Model. Modeled habitat for vernal pool tadpole shrimp is the same as that for vernal pool fairy shrimp, described above. However, because tadpole shrimp occur and persist in vernal pools and other aquatic features that have specific microhabitat characteristics and require a long hydroperiod to complete their life cycle, the modeled habitat overestimates the amount of habitat suitable to support the species. There are 2,230 acres of modeled vernal pool constituent habitat and 44,278 acres of modeled vernal pool complex in the action area.

2.9.13 Conservancy Fairy Shrimp

The Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005) does not identify the Southeastern Sacramento Valley Vernal Pool Region as being important to conservancy fairy shrimp and does not set any recovery criteria for conservancy fairy shrimp in the Western Placer County Core Area. No designated critical habitat for conservancy fairy shrimp is located within the action area.

There is only one occurrence of conservancy fairy shrimp in the action area at Mariner Ranch Conservation Bank. There is currently not sufficient information to determine whether this occurrence represents a population or an anomaly, and further monitoring is needed to determine whether this locality represents a sustainable population of this species (Service 2012).

Conservancy fairy shrimp typically occur in large, turbid playa pools that persist for a long time each year, which are generally not found in the action area. Development in the action area may have resulted in the loss, degradation and fragmentation of pools that have the correct abiotic characteristics to support conservancy fairy shrimp, such as hydroperiod, temperature and turbidity. Agricultural activities may have also impacted conservancy fairy shrimp in the action area.

Species Habitat Model. There is no modeled habitat for this species in the Plan; instead, pools downstream of the occupied pool within the same watershed are considered potential habitat.

2.9.14 Critical Habitat

2.9.14.1 Vernal Pool Fairy Shrimp

Two designated critical habitat units for vernal pool fairy shrimp, units 12a and 12b, are within the action area. These two units total 2,580 acres; however, based on land cover mapping for the Plan, only approximately 1,800 acres of designated critical habitat is mapped as vernal pool complex and is therefore likely to support the Primary Constituent Elements for vernal pool fairy shrimp critical habitat defined above in Section 2.8.13 (ICF International 2014). Although vernal pool constituent habitats could be found in other land cover types, mapping conducted for the Plan found that 91 percent of vernal pool constituent habitat falls within areas mapped as vernal pool complex. Even if vernal pool constituent habitat is present in land cover types other than vernal pool complex within the critical habitat units, these land cover types are unlikely to have the topographical features described in Primary Constituent Element 1 for vernal pool fairy shrimp critical habitat.

Based on the mapping used in the Plan to designate low, medium and high categories of vernal pool constituent habitat density within vernal pool complex in the action area (see Plan Section 3.4.3.1, *Land Cover Types* for a description of each of these categories), most of the critical habitat (1,260 acres) is categorized as having a low density (0-1 percent) of vernal pool constituent habitat. Approximately 430 acres of designated critical habitat has a medium density (1-5 percent) of vernal pool constituent habitat, and approximately 110 acres supports high densities (>5 percent) of vernal pool constituent habitat (ICF International 2014).

Of the 1,800 acres of vernal pool complex within designated critical habitat, 850 acres is within the Potential Future Growth Area. Approximately half of the critical habitat in the Potential Future Growth Area (440 acres) has a low density of vernal pools. However, most of the high-density vernal pool complex is within the Potential Future Growth Area (95 acres). Another 560 acres of vernal pool complex within designated critical habitat is located within the Reserve Acquisition Area, and approximately 390 acres of this are protected within existing open space (ICF International 2014). Analysis conducted for the Plan found that most vernal pool complex within the critical habitat in the Potential Future Growth Area shows signs of moderate to high levels of disturbance while vernal pool complex located in the Reserve Acquisition Area showed lower levels of disturbance (see Plan Section.3.4.3.1, *Land Cover Types* for a description of disturbance levels) (ICF International 2014).

2.10 Effects Analysis Development

This Biological Opinion uses a programmatic approach to evaluate the effects of Covered Activities because details about individual Covered Activities are not known at this time, and because the Covered Activities will occur over a large and ecologically diverse area over the course of 50 years. Furthermore, the Reserve System, the foundation of the Plan's Conservation Strategy, will be assembled during implementation of the Plan. Consequently, the exact location of lands to be conserved in the Reserve System is not yet known, limiting the precision of effects analyses. Therefore, effects to Covered Species and critical habitat in this Biological Opinion draw from the assessment of effects described in Chapter 4, *Effects of Covered Activities* of the Plan and that are summarized below.

Note that estimates of effects are based on land-cover mapping described in Chapter 3, *Physical and Biological Setting* of the Plan, and on modeled habitat for Covered Species described in Appendix D of the Plan. The accuracy of the following effects analyses are subject to the error inherent in land cover mapping and estimates of associated constituent habitats. However, implementation of the Plan will be based on surveys of reserve lands and areas affected by Covered Activities; these detailed surveys will provide a more accurate accounting of actual take and conservation to ensure that actual effects do not exceed estimated maximum effects and that conservation is meeting the Stay Ahead Provision described in section 8.4.3 of the Plan. Maximum effects presented below are take limits, which cannot be exceeded without amending the permits and the Plan (Section 10.5.3 of the Plan)

2.10.1 Effects Mechanisms Producing Covered Species Responses

For the purposes of effects analyses to Covered Species, this Biological Opinion evaluates the likely responses of Covered Species and critical habitat to three main types of effect mechanisms associated with implementation of Covered Activities: habitat loss and fragmentation, reduction in habitat function, and effects to individuals. Each of these mechanisms are described below.

The Plan's Conservation Strategy includes biological goals, objectives, and conservation measures (see Chapter 5 of the Plan) and Conditions on Covered Activities (see Chapter 6 of the Plan) that will avoid or minimize effects from these mechanisms. Beneficial effects that will result from implementation of the Conservation Strategy are described below in section 2.11 *General Effects Analysis* and in the *Conservation Actions* section for each Covered Species in Section 2.12. Effects to Covered Species.

2.10.2 Effects Analysis Methods

This section provides a description of the methods used by the Conservation Plan to estimate effects of Covered Activities. For additional details about these methods, refer to Section 4.3 of the Plan.

2.10.2.1 Habitat Loss from Land Conversion

Within Plan Area A, the Plan used two methods to estimate habitat loss resulting from land conversion from development: one specific to the Valley (see Plan Section 4.3.1.1, *Land Conversion in the Valley*), and one specific to the Foothills (see Plan Section 4.3.1.2, *Land Conversion in the Foothills*). For the Valley, estimates of habitat loss from land conversion from development are not based on actual project plans, but on a growth scenario that uses estimated activity footprints and historical patterns of development (see Plan Appendix M *Growth Scenario Memo*).

In the Foothills, higher-density growth is projected in the south along the I-80 corridor and in unincorporated Granite Bay and portions of the Loomis Basin. Much lower-density, rural residential growth is projected to the north. In the higher-density portion of the Foothills Potential Future Growth Area, The Plan used the analysis described in Plan Appendix M, *Growth Scenario Memo*, to estimate growth in employment and housing. Then to estimate the amount of habitat loss resulting from covered urban and suburban growth, land use density factors were applied as further described in Plan Section 4.3.12. In low-density areas in the

foothills, estimates for habitat loss from land conversion were based on the amount of rural residential development that could be accommodated by available, subdividable lands.

Habitat loss in Plan Area B will result almost entirely from activities in Plan Area B1, *Permittee Activity in Non-participating City Jurisdiction* (see Plan Figure 1-2). Activities in this area include several specific projects such as Placer County Water Agency canals and new pipelines, a portion of Placer Parkway, the I-80/State Route 65 interchange, and operations and maintenance of miscellaneous County-owned facilities. Placer County Water Agency activities in Plan Area B2 are not expected to result in appreciable loss of habitat. The conservation actions in Plan Areas B3, B4, and B5 will have a net benefit on Covered Species and habitats (see Plan Section 4.4.7, *Conservation Programs*).

2.10.2.2 Temporary Effects

Covered Activities will also result in temporary losses of habitat. The Plan considers a loss of habitat to be temporary if effects to that habitat last for less than one year and the disturbed area recovers to pre-project or ecologically improved conditions within one year. Most of the temporary effects anticipated to result from Covered Activities are related to urban development, including construction corridors for pipelines, utilities, roads, and other infrastructure and for flood control. Other examples of covered temporary effects include routine maintenance in stream channels for flood control, and maintenance along roadsides of highways. Estimates of temporary effects on natural communities in the Plan were based on a percentage of the total habitat loss allowed or estimated under the Plan (see Section 4.3.2 of the Plan for percentages used for specific natural communities).

2.10.2.3 Indirect Effects

The Plan estimates indirect effects from Covered Activities in the Valley using the amount of land likely to fall within 250 feet of the outer edge of new development in areas that are not already subject to urban indirect effects. Existing indirect effects were estimated in GIS using the present pattern of development and key indicators of indirect effects (see section 4.3.3, *Methods to Estimate Indirect Effects in the Valley* of the Plan for additional details about methods and Tables 4-4A-C in the Plan for estimates of existing indirect effects in the Plan Area).

The Plan considers four categories of indirect effects from Covered Activities in the Valley. They include (1) off-site indirect effects that are adjacent to urban development projects in the Potential Future Growth Area; (2) off-site indirect effects that are adjacent to rural development in the Conservation and Rural Development Area; (3) new urban edge that would be established along the Potential Future Growth Area/Conservation and Rural Development Area border; and (4) on-site indirect effects on vernal pool wetlands.

In the Foothills, quantification of indirect effects associated with an increase in rural densities was based on the portion of predicted future growth that would result from the subdivision of parcels larger than 10 acres into parcels smaller than 10 acres. Where this subdivision occurs, the balance of the parcel is considered to be subject to indirect effects associated with fragmentation and human presence.

2.10.2.4 Effects on Streams

Although the effects of urban development on the Stream System were captured in estimates of habitat loss, this calculation did not include impacts from in-stream Covered Activities such as bridge and flood-protection projects that will involve work directly in streams. The Plan used specifications of typical projects to estimate temporary and permanent disturbance for the in-stream program. The relative frequency of road crossings or other Covered Activities affecting the in-stream environment was extrapolated to total effects of all in-stream programs over the permit term (see Plan Section 4.3.5, *Methods for effects of Covered Activities on Streams* for additional details).

2.10.2.5 Effects from Habitat Management, Enhancement, Restoration and Creation

Conservation measures for Covered Species involve the creation, enhancement, and restoration of habitat. These activities will result in temporary effects to habitat and in some cases convert one land-cover type to another. Management of Reserve System lands will also result in temporary effects to habitat. However, these activities will result in a net benefit to Covered Species and are described qualitatively rather than quantified (see Plan Section 4.3.7 for additional details).

2.11 General Effects Analysis

To minimize repetition in this Biological Opinion, we use a two-tiered approach to describe the effects of the proposed action. This Section describes the effects resulting from Covered Activities on natural communities. Sections 2.12.1-2.12.12 then identifies particular effects for each Covered Species, and Section 2.12.13 discusses effects to designated critical habitat.

2.11.1 Habitat Loss and Fragmentation

This section describes habitat loss and fragmentation in the Plan Area as a whole and then provides detailed descriptions of habitat loss and fragmentation by natural community type. Although habitat fragmentation results in a reduction of habitat function, this effect mechanism is closely tied to habitat loss and is therefore described here rather than in Section 2.11.2, *Reduction in Habitat Function* below.

2.11.1.1 Plan Area

Table 1 provides estimates of the acreage of natural community and constituent habitat that will be lost as a result of Covered Activities, including urban and rural residential development and regional public programs (see Section 2.2 above for a description of Covered Activities). The table also includes the total acreage of each natural community and constituent habitat currently within Plan Area A. Only a small amount of the habitat loss described in Table 1 is in Plan Area B where Covered Activities will affect less than 1 percent of the 50,636-acre land area of the non-participating cities.

In Table 1, habitat loss is expressed as either the maximum acreage of loss of a natural community, land cover type, or constituent habitat (maximum permanent effects), or as estimates of projected loss for some constituent habitats (i.e., flexible permanent effects). Temporary

effects are also defined as either maximum or flexible. Maximum effects are take limits, which cannot be exceeded without amending the permits and the Plan (Plan Section 10.5.3, *Amendments*). Flexible effects are reasonable estimates of land conversion, but actual effects may be greater or more limited as long as the maximum effects are not exceeded. Note that the relationship between natural community and constituent habitats is hierarchical, and constituent habitats are nested within natural communities (see Section. 2.9.1, above). For constituent habitats with flexible effects, maximum habitat loss is dictated either by the maximum effects for the natural community or for a group of constituent habitats within a natural community. For example, total maximum effects for vernal pool constituent habitats are 580 acres. Within the 580-acre limit, no more than 185 acres of loss of vernal pool wetlands is permissible. The allowable loss of other constituent habitats (seasonal wetlands in vernal pool complex and seasonal swales) are flexible, but effects that exceed the collective maximum effect of 580 acres for all vernal pool complex constituent habitats would not be covered.

As described in Section 2.2 above, Plan Area A is divided into the Valley and Foothills. The Plan further divides both the Valley and Foothills areas into a Potential Future Growth Area and a Conservation and Rural Development Area (see Plan Figures 1-5 and 2-4; note that Conservation and Rural Development Areas include the Reserve Acquisition Area and existing reserves/protected areas outside the Potential Future Growth Area). The Plan then sets maximum effects within each of these components. These limits are shown in Plan Table 4-1. By doing this, the Plan not only sets a maximum habitat loss for each natural community and all communities as a whole (as shown in Table 1), but also identifies where these effects will take place within the Plan Area. Note that in Plan table 4-1, the maximum effects for one community or constituent habitat are not necessarily additive across geographies. Generally, the maximum effects within the Valley subarea will be roughly the sum of effects in the Valley Potential Future Growth Area and the Valley Conservation and Rural Development Area or slightly smaller. For example, the maximum effect on vernal pool complex in the Valley is 12,200 acres in the Potential Future Growth Area and 280 acres in the Conservation and Rural Development Area; if actual land conversion from Covered Activities in the Conservation and Rural Development Area reached the 280-acre maximum effect, the maximum effect in the Potential Future Growth Area would be reduced to 12,120 acres so as to avoid exceeding the overall Valley vernal pool complex maximum effect of 12,400 acres.

The maximum acreage of habitat loss from Covered Activities within the Plan Area as a whole is 30,100 acres. The maximum acreage of temporary effects from Covered Activities in the Plan Area is 1,335 acres. Urban development in the Valley Potential Future Growth Area accounts for most of the loss of habitat from Covered Activities including 19,700 acres of land conversion. Within the Valley Conservation and Rural Development Area, only one percent of the total land area will be subject to land conversion from Covered Activities. This includes a loss of 280 acres of vernal pool complex, 200 acres of land currently in rice production, and 210 acres of other agriculture and grassland. In total within the Valley (i.e. within the Valley Potential Future Growth Area and Valley Conservation and Rural Development Area combined), 20,200 acres (approximately 33 percent) of natural communities will be subject to land conversion from Covered Activities.

Most habitat loss in the Foothills Potential Future Growth Area will result from rural residential development, with the majority of development anticipated to occur in the already built-up areas

around I-80, the city of Auburn, and State Route 49 to the north. An estimated 8,770 acres of habitat will be lost to Covered Activities within the Foothills Potential Future Growth Area. Within the Foothills Conservation and Rural Development Area, the Plan estimates 1,800 acres of habitat will be lost to Covered Activities, mainly rural residential development. In total within the Foothills (i.e. within the Foothills Potential Future Growth Area and Foothills Conservation and Rural Development Area combined), 9,600 acres (approximately 12 percent) of natural communities will be subject to land conversion from Covered Activities

Table 1. Extent of Natural Communities and the Maximum Allowable Loss (in acres; from Plan Tables 4-1, 4-3, 5-3, 5-4 and 5-5).

Natural Community and Land Cover Type	Extent in Plan Area A	Maximum Permanent Effects	Flexible Permanent Effects	Maximum Temporary Effects	Flexible Temporary Effects
Grassland	34,760	6,900	0	235	0
Vernal Pool Complex	45,065	12,550	0	455	0
Constituent Habitats	2,237	580	0	30	0
Vernal Pool	790	185	0	15	0
Seasonal Wetland	845	0	223	0	8
Seasonal Swale	602	0	172	0	7
Uplands	42,829	0	11,970	0	425
Aquatic/Wetland Complex	3,433	0	260	0	105
Constituent Habitats	2,850	260	0	105	0
Fresh Emergent Marsh	1,112	105	0	50	0
Lacustrine	1,061	0	103	0	28
Seasonal Wetland	677	0	52	0	27
Uplands	583	0	0	0	0
Riverine/Riparian Complex	6,685	0	490	165	0
Constituent Habitats	5,519	490	0	165	0
Riverine	868	0	115	0	50
Riparian	4,651	375	0	115	0
Uplands	1,166	0	0	0	0
Oak Woodland	50,870	6,210	0	180	0
Valley Oak Woodland	1,364	140	0	25	0
Agriculture	24,954	0	3,550	0	170
Rice	19,580	2,060	0	90	0
Total	167,131	15,975	14,125	710	625

Table 2. Maximum Allowable Loss by Geographic Area, in acres. Acreages in italics represent flexible allowable losses.

Communities and Constituent Habitats	Plan Area A						Plan Area B
	Valley Potential Future Growth Area	Valley Conservation and Rural Development Area	Total	Foothills Potential Future Growth Area	Foothills Conservation and Rural Development Area	Total	Total
Vernal Pool Complex (VPC)	12,200	280	12,400	10	100	100	50
Vernal Pool Complex Uplands	<i>11,640</i>	<i>270</i>	<i>11,830</i>	<i>10</i>	<i>100</i>	<i>100</i>	<i>40</i>
Vernal Pool Wetlands	560	10	570	-	-	-	10
Vernal Pools	180	10	180	-	-	-	5
Seasonal Wetlands in VPC	<i>220</i>	<i>10</i>	<i>220</i>	-	-	-	<i>3</i>
Seasonal Wetland Swales	<i>170</i>	<i>10</i>	<i>170</i>	-	-	-	<i>2</i>
Grassland	3,400	110	3,500	3,000	500	3,300	100
Aquatic/Wetland Complex	120	10	120	110	30	130	10
Fresh Emergent Marsh	50	10	50	40	10	50	5
Lacustrine	<i>50</i>	<i>10</i>	<i>50</i>	<i>40</i>	<i>10</i>	<i>50</i>	<i>3</i>
Non-VPC Seasonal Wetlands	<i>20</i>	<i>10</i>	<i>20</i>	<i>30</i>	<i>10</i>	<i>30</i>	<i>2</i>
Riverine/Riparian Complex	150	10	150	310	20	330	10
Riverine	80	10	80	30	10	30	5
Riparian	70	10	70	280	10	300	5
Valley Oak Woodland	30	10	30	100	10	100	10
Oak Woodland	1,100	10	1,100	4,700	400	5,100	10
Agriculture	2,700	270	2,900	540	20	540	110
Rice	1,800	200	2,000	-	-	-	60
Other Agriculture	<i>900</i>	<i>70</i>	<i>900</i>	<i>540</i>	<i>20</i>	<i>540</i>	<i>50</i>

Effects of in-stream programs (see Section 2.2.5.16 above for a description of these programs) were calculated separately from habitat loss totals shown in Table 1; in-stream effects are measured by the linear extent of stream habitat affected. Permanent effects to streams will result mainly from road crossings and, to a lesser extent, from flood protection projects. Both new construction and reconstruction of existing bridges will increase the area of the stream permanently subject to effect, even if the stream bottom itself is restored after construction. Permanent effects related to bridge construction and repair include the loss of riparian land cover and the loss of stream/riverine habitat to pilings, piers and/or footings. Permanent effects from flood protection projects include the installation of hardscape on banks for erosion/sediment control and bank stabilization and the conversion of natural or semi-natural land cover to flood detention/water retention basin. The Plan estimates that there will be 5.51 miles of permanent effects to streams resulting from all in-stream activities; this is equivalent to 1 percent of existing mapped streams. Temporary effects to in-stream habitat are most likely to occur during construction when use of heavy equipment may result in loss of vegetation associated with accessing a site and during dewatering activities. Activities such as minor vegetation, silt, and debris removal could also cause short-term temporary increases in turbidity. The Plan estimates that 36.51 miles of stream will be temporarily effected by in-stream activities; this is equivalent to 6.3 percent of existing mapped streams.

Although conservation actions in support of the Conservation Strategy will be implemented to benefit species and natural communities, some temporary effects to habitat will occur in the course of managing reserve lands and in implementing habitat restoration and creation. For example, restoration and creation activities will temporarily affect land cover surrounding the restored/created wetlands. Installing and maintaining fences may have temporary effects on land cover within and immediately adjacent to the fenceline. Riparian and in-stream restoration projects may involve vegetation removal, and the temporary dewatering of stream reaches. Prescribed burning or creation of fuel breaks in support of fuels management on reserve lands could temporarily effect grassland and woodland habitats. In addition, limited recreational facilities such as trails may be developed on future reserve lands (see Section 6.3.6.1, *Reserve Management Condition 1, Public Access and Recreation on Future Reserve Lands*) and result in permanent habitat loss. No more than 50 acres of trails (this equates to 70 miles of trail assuming a 6-foot width) may be created on future reserves. Habitat lost to trails on the Reserve System will count towards totals in Table 1.

In the case of restored or created habitat, some land-cover types will be converted from one type to another. In the Valley, the majority of restoration and creation of vernal pool complex and constituent habitats will take place on grasslands; approximately 2,700 acres of grasslands will be converted to vernal pool complex. In the Foothills, approximately 400 acres of grassland will be restored to oak woodlands, wetlands, and riparian habitat. In addition, up to 8,000 acres total of rice land or other agriculture land may be used for some other form of agriculture, and a portion (approximately 1,760 acres) may be used to restore natural communities such as fresh emergent marsh and other wetlands, riparian, valley oak woodland, and vernal pool complex. This conversion of land from one type to another will not result in an overall loss of habitat for Covered Species or cause habitat fragmentation. While temporary effects resulting from these conservation actions have not been quantified, they will be minimal, will be implemented in ways to avoid or minimize effects on Covered Species (see Section 5.3.2.1.2, *Content of Reserve Unit Management Plans*), and will ultimately provide a benefit to Covered Species.

The loss of habitat in the Valley and Foothills will fragment habitat for Covered Species in the action area. Construction of new roads or canals may create barriers that disrupt movements of Covered Species and other native wildlife among habitat areas. In addition, construction of new linear infrastructure (e.g., flood channels, levees/dikes, and canals) may create barriers for movement of wildlife species with limited mobility disrupting vital behavioral patterns such as migration, dispersal, or seeking food or shelter. Habitat fragmentation can also limit or prevent the dispersal of seeds, plant pollinators, cysts, eggs, and other propagules within and between populations. Because habitat fragments are smaller than the whole, they typically have diminished resources to sustain viable populations of Covered Species (Franklin et al. 2002) and are vulnerable to stochastic events and extirpation. Isolated fragments may also be less likely to be repopulated.

While development within the Valley Potential Future Growth Area will increase habitat fragmentation, habitat within the Valley Potential Future Growth Area is already highly fragmented (the Plan estimates that approximately 27 percent of vernal pool complex within the Potential Future Growth Area is currently within 250 feet of existing urban development), and much of the remaining habitat within the Potential Future Growth Area will be developed by the end of the permit term. The Plan allows only up to 2,000 acres of the Reserve System to be established in the Valley Potential Future Growth Area and only limited habitat is expected to remain in the Potential Future Growth Area at the end of the permit term. As a result, habitat fragmentation will likely not have as great an effect within the Valley Potential Future Growth Area as it will in other parts of the Plan Area where more habitat will remain and be susceptible to additional fragmentation.

Covered Activities will increase habitat fragmentation in the Valley Conservation and Rural Development Area where the majority of habitat will not be directly affected. Although the Valley Conservation and Rural Development Area is already significantly fragmented by roads, drainage features, and agriculture, Covered Activities will increase the extent of habitat fragmentation. Covered Activities will primarily increase habitat fragmentation at the interface between the Valley Potential Future Growth Area and Conservation and Rural Development Area, although certain transportation projects in the Valley Conservation and Rural Development Area that involve construction of new roads or widening of existing roads will also fragment habitat and create barriers for Covered Species.

Fragmentation is likely to have the greatest effect within the Foothills Potential Future Growth Area and Conservation and Rural Development Area where habitat loss will result mainly from rural development. The impact of fragmentation is higher in the rural setting in part because dispersed patterns of development maximizes the individual influence of each home (Lenth et al. 2006), and because the existing landscape is generally less disturbed. In addition, lengthy private roads and driveways are often required to access rural homes. These roads further fragment the landscape by splitting larger blocks of contiguous habitat into smaller blocks. New roads can potentially degrade movement corridors, introduce vehicle-related mortality, and create barriers to wildlife movement.

Conservation Actions. Within the 269,118- acre Plan Area, Covered Activities will result in the permanent loss of 30,100 acres and in the temporary loss of 1,335 acres of natural and semi-natural communities that could provide habitat for Covered Species and increase fragmentation

of remaining habitat. In order to minimize and mitigate for these effects, the Plan includes landscape-level biological goals intended to preserve and manage large interconnected blocks of land. As more specifically described in section 2.3.1 above, by the end of the 50-year permit term, an approximately 47,300-acre Reserve System will be established within the Plan Area (see Plan Table 5-3). The Reserve System will augment approximately 16,000 acres of existing reserves and protected areas in the action area and cumulatively, 38 percent of the present natural and semi-natural landscape in Plan Area A would ultimately be subject to conservation management.

In order to minimize the effects of habitat fragmentation and to preserve habitat connectivity within the action area, the Reserve System will mainly be located in the western and northern Valley and in the northern Foothills in the Reserve Acquisition Area, away from future urban and suburban growth. Only 1 percent of the total Valley Reserve Acquisition Area land area will be affected by development related Covered Activities. Within the Foothills Conservation and Rural Development Area, the establishment of 11,200 acres of reserves, combined with 6,000 acres of existing protected lands, will leave approximately half of the Foothills Conservation and Rural Development Area in private ownership and potentially available for very low-density residential development and large parcel subdivision.

In order to link and provide spatial diversity of protected communities, the Reserve System will be distributed across the Plan Area. See Section 2.3.1 above for a description of the five conservation zones considered in the Plan, Plan Section 5.3.1.3.2, *Conservation Zones* for a summary of the conservation that will occur in each zone, and Table 5-3 of the Plan for acreages to be protected within each Conservation Zone.

Impacts from habitat fragmentation will also be minimized through design of the Reserve System. See Plan Section *CMI L-2, Reserve Acquisition Strategy* for a description of reserve design principles that will guide reserve assembly. Habitat fragmentation will be minimized by preserving large areas and working to minimize edge to area ratios, by preserving habitat connectivity between new and existing preserves in the Plan Area, and by locating reserves on high-quality habitat between or adjoining existing preserves.

The following landscape level biological goals and objectives (and their associated conservation measures, which are not listed here, see Plan Table 5-8) from Chapter 5 of the Plan will reduce effects of habitat loss and fragmentation on the scale of the Plan Area as a whole:

- Goal L-1, A Reserve System with representative natural communities along a range of environmental gradients large enough to support ecosystem function, sustain populations of Covered Species, maintain or increase biological diversity of native species, and accommodate changing environmental conditions.
- Objective L-1.1, Establish a Large, Interconnected Reserve System.
- Goal L-2, Reserve System connectivity to sustain the effective movement and genetic interchange of organisms between natural communities in a manner that maintains the ecological integrity of the natural communities within the Plan Area.

- Objective L-2.1, Protect Habitat Linkages.
- Objective L-2.2, Maintain and Enhance Reserve System Permeability.
- Objective L-2.3, Establish East–West Corridors.
- Objective L-2.4, Conserve North–South Connectivity.
- Objective L-2.5, Conserve Upland Natural Communities Surrounding Aquatic/Wetlands Complex Natural Communities.

2.11.1.2 Vernal Pool Complex and Grassland Communities

The Plan estimates that Covered Activities will result in the loss of 12,550 acres of vernal pool complex, which equates to approximately 28 percent of mapped vernal pool complex in the action area. About half of the vernal pool complex anticipated to be lost is mapped as having an intermediate or high density of vernal pool constituent habitat (see Plan Section 3.4.3.1, *Land Cover Types* for a description of density categories). The Plan estimates that Covered Activities will result in the loss of 6,900 acres of grassland in the Plan Area. The maximum extent of loss of vernal pool constituent habitats within the affected vernal pool complex and grasslands will be 580 acres, of which no more than 185 acres will be vernal pool wetlands.

In addition, temporary impacts to vernal pool complex and vernal pool constituent habitat will result from rural and urban development, regional public programs, and conservation actions that affect an area, but not to the extent that the effect persists for a year. Covered Activities will result in temporary effects to 30 acres of vernal pool constituent habitat within 455 acres of vernal pool complex that will be temporarily affected. No more than 15 acres of temporarily impacted vernal pool constituent habitat will be vernal pool wetlands. Up to 235 acres of grassland will be temporarily affected.

Most of the loss of vernal pool complex and grassland will occur in the Valley portion of the Plan Area. The maximum amount of loss for the Valley is 12,400 acres of vernal pool complex, and 3,500 acres of grasslands. The Valley is further divided into the Potential Future Growth Area and the Conservation and Rural Development Area (see Plan Figures 1-5 and 2-4; note the Valley Conservation and Rural Development Area equates to the Valley Reserve Acquisition Area and existing reserves outside the Potential Future Growth Area). Most loss of vernal pool complex (12,200 acres) and grassland (3,400 acres) will occur in the Valley Potential Future Growth Area as a result of land conversion from development.

More limited loss of vernal pool complex will occur in the Valley Conservation and Rural Development Area. Reserve acquisition will be focused on the Valley Conservation and Rural Development Area, where there are larger areas of intact natural communities, especially vernal pool complex and grasslands. Within the Valley Conservation and Rural Development Area, no more than 280 acres of vernal pool complex with 8 acres of vernal pool constituent habitats, and no more than 110 acres of grassland will be lost as a result of Covered Activities. However, actual loss of these habitats may be less because the total loss of vernal pool complex in the Valley Potential Future Growth Area and Conservation and Rural Development Area must not

exceed 12,400 acres and loss of grassland in the Valley must not exceed 3,500 acres (see Table 4-1 in the Plan for maximum loss of natural communities and constituent habitats by Plan Area).

Grassland in the Foothills represents a transition between the Valley grassland and the more heavily wooded uplands. Vernal pool complex is limited in the Foothills because, although some soils there can support vernal pool constituent habitat, the soils are generally better-drained, rolling landscapes that intergrade with oak savanna. A maximum of 10 acres of vernal pool complex will be lost in the Foothills Potential Future Growth Area, and no more than 100 acres of vernal pool complex will be lost in the Foothills Conservation and Rural Development Area. Loss of vernal pool complex in the Foothills Potential Future Growth Area and Conservation and Rural Development Area must not exceed a combined total of 100 acres and no vernal pool constituent habitat is anticipated to be lost in the Foothills. Grasslands are much more extensive in the Foothills, and Covered Activities are estimated to result in the loss of 3,300 acres of grassland. A total of 3,000 acres of grassland may be lost in the Foothills Potential Future Growth Area, and no more than 500 acres may be lost in the Foothills Conservation and Rural Development Area.

Effects from fragmentation of vernal pool complex and grassland will mainly take place within the Valley Conservation and Rural Development Area where the majority of habitat will not be directly affected. While there is already significant fragmentation resulting from roads and agriculture, Covered Activities will increase habitat fragmentation at the interface between the Potential Future Growth Area and Conservation and Rural Development Area in both the Valley and the Foothills as a result of some parcels being developed and others being protected or maintained in agriculture.

Conservation Actions. Listed below are biological goals and objectives from Chapter 5 of the Plan that will reduce and offset effects to vernal pool complex and grassland described above and that will result in beneficial consequences to Covered Species that use these habitats. See Plan Table 5-8 for specific conservation measures associated with these goals and objectives. Also, see Section 6.3 of the Plan for conditions on Covered Activities that will reduce effects to vernal pool complex and grassland. Beneficial effects as well as additional species-specific goals and objectives are described in Section 2.12 below where particular effects for each Covered Species are presented.

- Goal VPCG-1, Interconnected vernal pool complex and grassland natural communities with functional ecological process that sustain Native Species.
- Objective VPCG-1.1, Protect Existing Vernal Pool Complexes.
- Objective VPCG-1.2, Restore/Create Vernal Pools.
- Objective VPCG-1.3, Protect Grasslands.
- Objective-VPCG-1.4, Restore Grasslands.
- Objective VPCG-2.1, Enhance Vernal Pool Vegetation and Hydrology.

Implementation of these goals, objectives and conservation measures will protect 17,000 acres of vernal pool complex including 790 acres of vernal pool constituent habitat (of which at least 250 acres will be vernal pools), and in the restoration of 3,000 acres of vernal pool complex including 900 acres of vernal pool constituent habitat of which a minimum of 34 percent (326 acres) will be delineated as vernal pools. At least 50 percent of the vernal pool complex preserved will have high or intermediate density of vernal pool constituent habitat. Most of the habitat protected will be in the Valley Reserve Acquisition Area divided between the North Valley and South Valley Conservation Zones (see Plan Figure 5-1 and Table 5-3 of the Plan for acreages to be protected within each Conservation Zone) although up to 2,000 acres may be within the Potential Future Growth Area.

To help ensure that restoration is appropriately sited and likely to be successful, the Plan includes specific criteria for restoration sites where restoration of vernal pool complex and vernal pool constituent habitat may take place (see Plan CM VPCG-2, *Reserve Design for Vernal Pool Restoration/Creation*). The Plan also requires extensive monitoring of vernal pool restoration sites and describes criteria for determining whether restoration of vernal pool habitat is successful (see Plan Section 7.4.3.1.2, *Monitor Success of Vernal Pool Complex Restoration/Creation Measures*).

To help minimize temporal loss of habitat, the Plan includes a Stay-Ahead Provision (see Section 8.4.3 of the Plan) and milestones (see Plan Section 8.12), which will ensure habitat is protected, restored and created at a rate consistent with impacts. The Plan also includes an Advanced Acquisition obligation (see Plan Section 5.3.1.5.2) that must be met prior to year two of Plan implementation or prior to Covered Activities impacting more than 1,800 acres of vernal pool complex or 80 acres of vernal pool constituent habitat.

After restoration and creation is successfully completed, a total of 20,000 acres of vernal pool complex including 1,690 wetted acres of vernal pool constituent habitat will be protected, if the maximum impacts to vernal pool complex occur (restoration of vernal pool constituent habitat will occur at a 1.5:1 ratio of restored/created to affected habitat; see “dependent on effects commitments” in Table 5-4 of the Plan).

2.11.1.3 Aquatic/Wetland and Riverine/Riparian Communities

The Plan’s Conservation Strategy includes the avoidance and minimization of impacts to the Stream System and other wetlands, and, as such, there are comparatively small impacts to these habitats from Covered Activities. Covered Activities will result in the loss of 260 acres of aquatic/wetland constituent habitat (fresh emergent marsh, lacustrine, and non-vernal pool seasonal wetland) and 490 acres of riverine/riparian complex (includes riverine and riparian constituent habitats); an additional 105 acres of aquatic/wetland habitat and 165 acres of riverine/riparian habitat will be temporarily affected by Covered Activities.

Effects to stream habitat from in-stream programs is estimated by linear extent rather than by acreage. Impacts to the stream system will generally occur in small segments (typically about 100 feet in extent) at multiple locations throughout the Plan Area. Four main classes of Covered Activities will have effects on streams: road crossings, pipelines not associated with road crossings, flood control, and fish passage enhancement projects. The total permanent direct

effect on streams is estimated to be 5.5 miles (approximately 1.0 percent of existing streams). Although Covered Activities will impact these habitats, in-stream Covered Activities generally will not convert these habitats and will leave the stream channel intact. An additional 36.5 miles (approximately 6.3 percent of existing streams) will be temporarily affected. On an annual basis, temporary effects will occur over an estimated 0.73 mile of stream. Best Management Practices and other conditions outlined in Chapter 6, *Program Participation and Conditions on Covered Activities*, will require minimization of temporary effects and rehabilitation of areas subject to construction disturbance.

Conservation Actions. Listed below are biological goals and objectives from Chapter 5 of the Plan that will reduce and offset effects to aquatic/wetland and riverine/riparian habitat described above and that will result in beneficial consequences to Covered Species that use these habitats. See Plan Table 5-8 for specific conservation measures associated with these goals and objectives. Also, see Section 6.3 of the Plan for conditions on Covered Activities that will reduce effects to aquatic/wetland and riverine/riparian habitat. Beneficial effects as well as additional species-specific goals and objectives are described in Section 2.12 below where particular effects for each Covered Species are presented.

- Goal AW-1, Reserve System sustaining functional fresh emergent marshes, seasonal wetland and lacustrine habitats (e.g., ponds), and the hydrologic processes that support them to benefit Covered Species and promote native biodiversity.
- Objective AW-1, Protect Aquatic/Wetland Complex Natural Community.
- Objective AW-2, Restore/Create Aquatic/Wetland Complex Natural Community.
- Goal RAR-1, Functional riverine and riparian communities that benefit Covered Species and promote native biodiversity in the Plan Area.
- Objective RAR-1.1, Protect Riverine/Riparian Complex.
- Objective RAR-1.2, Protect Riverine Constituent Habitat.
- Objective RAR-1.3, Restore Riverine/Riparian Complex.
- Objective RAR-1.4, Enhance Riparian Vegetation.
- Objective RAR-1.5, Remove or Modify Fish Barriers.
- Objective RAR-1.6, Modify Unscreened Water Diversions.
- Objective RAR-1.7, Enhance Streams.

Implementation of these goals, objectives, and conservation measures will result in the protection of 586 acres of aquatic/wetland complex and in the restoration of 410 acres of aquatic/wetland habitat if the maximum impacts to aquatic wetland occur (restoration of aquatic/wetland habitat will occur at a 1.5:1 ratio of restored/created to affected aquatic/wetland types; see “dependent

on effects commitments” in Table 5-4 of the Plan). In the Valley, at least 40 percent of the aquatic/wetland restoration dependent on effects will be fresh emergent marsh, and at least 50 percent of the restoration dependent on effects will be fresh emergent marsh in the Foothills. This will result in a net increase in the aquatic/wetland complex natural community in the action area.

Plan implementation will result in the protection of 2,200 acres of riverine/riparian complex and the restoration of 1,425 acres of riverine/riparian complex if the maximum impacts occur (restoration of riverine/riparian constituent habitat will occur at a 1.52:1 ratio of restored/created to affected habitat; see “dependent on effects commitments” in Table 5-4 of the Plan).

Riverine/riparian complex protected in the Reserve System will include at least 1,410 acres of riparian constituent habitat (960 acres in the Valley and 451 acres in the Foothills) and will include 88.6 linear miles of streams. Riverine/riparian complex in the Reserve System will include a mosaic of riverine/riparian habitat and closely associated communities, including fresh emergent wetlands, seasonal wetlands, off-channel wetlands, and stands of valley oak woodland; up to 22 percent of riverine/riparian complex restoration may include these closely associated communities. Priority will be given to protecting large intact riparian stands and riverine and riparian segments inhabited by Covered Species, and will focus on specific stream systems identified in the Plan (see Plan Section 5.3.1.5.4). The assembly of the Reserve System will increase the amount of protected riverine and riparian constituent habitats in the action area and will protect corridors for movement from the Valley to the Foothills. Specific measures will be taken to enhance stream reaches for covered fish species (see Plan Objectives RAR-1.5, RAR-1.6, and RAR-1.7).

2.11.1.4 Oak Woodland Communities

The oak woodland natural community type includes blue oak, interior live oak, mixed oak woodland, and oak-foothill pine woodland. Valley oak woodland is represented as a separate community in order to emphasize this biologically important habitat. A maximum of 6,210 acres of oak woodland will be lost as a result of Covered Activities, and a maximum of 140 acres of valley oak woodland could be lost. The greatest effect on woodland communities will occur within the Foothills where the cumulative footprint of very low-density rural residential development may result in a direct loss of just over 5,100 acres of oak woodland and 100 acres of valley oak woodland. An additional 5,942 acres of oak woodland could be indirectly affected by Covered Activities (see Plan Table 4-5, *Indirect Effects in the Foothills- Increased Rural Density*)

Conservation Actions. Listed below are biological goals and objectives from Chapter 5 of the Plan that will reduce and offset effects to oak woodland communities described above and that will result in beneficial consequences to Covered Species that use these habitats. See Plan Table 5-8 for specific conservation measures associated with these goals and objectives. Also, see Section 6.3 of the Plan for conditions on Covered Activities that will reduce effects to oak woodland habitats. Beneficial effects as well as additional species-specific goals and objectives are described in Section 2.12 below where particular effects for each Covered Species are presented.

- Goal OW-1, Functional oak woodland communities, including the oak woodland community and valley oak woodland community that benefit Covered Species and promote native biodiversity.
- Objective OW-1.1, Protect Oak Woodlands.
- Objective OW-1.2, Restore Oak Woodlands.
- Objective OW-1.3, Maintain and Enhance Oak Woodlands.
- Objective OW-1.4, Protect Valley Oak Woodlands.
- Objective OW-1.5, Restore Valley Oak Woodlands.

Implementation of these goals, objectives, and conservation measures will result in the protection of 10,110 acres of oak woodland, the restoration of 100 acres of oak woodland, the protection of 190 acres of valley oak woodland, and the restoration of 225 acres of valley oak woodland. An additional 285 acres of valley oak woodland would be restored if maximum impacts to valley oak woodland occur (restoration of valley oak woodland will occur at a 1.5:1 ratio of restored to affected habitat for impacts within the Valley in Plan Areas A and B; see “dependent on effects commitments” in Table 5-4 of the Plan). In order to protect large habitat blocks, preservation of the oak woodland community will be focused in areas of the county with the fewest roads, the largest parcels and the largest assemblage of un-fragmented oak woodlands; restoration will be focused to expand and connect existing patches of oak woodland. In addition, because valley oak woodland is generally located within the stream system, stream system avoidance and minimization requirements (See Plan Section 6.3.3.1, *Stream System Condition 1, Stream System Avoidance and Minimization*) will result in additional protection of valley oak woodland. Protection of 190 acres of valley oak woodland, combined with avoidance of the stream system and restoration of valley oak woodlands will result in an increase in valley oak woodland in the action area by the end of the permit term.

2.11.1.5 Rice and Field Agriculture (Semi-natural Communities)

Covered Activities will result in the loss of up to 3,350 acres of agricultural land in the action area. This includes 2,900 acres of agricultural land in Valley Plan Area A (including an estimated 2,000 acres of rice), 110 acres of agricultural land in Plan Area B (including 60 acres of rice), and 900 acres of other agricultural land-cover types in Valley Plan Area A. An additional 540 acres of other agricultural types will be lost in the Foothills. Although the category “other agricultural lands” includes a small amount of field agriculture that may be affected on a pro-rata basis, the types of agriculture that mostly comprise this community type are generally thought to provide little habitat value for Covered Species. Although some conversion of this type of agriculture is anticipated from Covered Activities (see Plan Table 4-1), it is not considered further in this Biological Opinion.

In the Valley, rice cultivation accounts for 90 percent of the extent of semi-natural communities, but most of this falls to the west of the Potential Future Growth Area so that only about 10 percent of rice lands will be subject to conversion due to covered future growth. Habitat

restoration during implementation of the Plan's Conservation Strategy could result in up to an additional 1,760 acres of rice land and 50 acres of field agriculture being restored to natural communities, such as fresh emergent marsh and other wetlands, riparian, valley oak woodland, and vernal pool complex.

Conservation Actions. Listed below are biological goals and objectives from Chapter 5 of the Plan that will reduce and offset effects to semi-natural communities described above and that will result in beneficial consequences to Covered Species that use these habitats. See Plan Table 5-8 for specific conservation measures associated with these goals and objectives. Also, see Section 6.3 of the Plan for conditions on Covered Activities that will reduce effects to these semi-natural communities. Beneficial effects as well as additional species-specific goals and objectives are described in Section 2.12 below where particular effects for each Covered Species are presented.

- Goal AO-1, Reserve System with integrated open space that precludes development, enhances Reserve System connectivity, and provides opportunities for protecting, restoring, and managing habitat for Covered Species and other native species.
- Objective AO-1.1, Protect Agricultural Lands and Other Open Space.

Implementation of these goals, objectives, and conservation measures will result in the protection of at least 8,240 acres of agricultural lands or natural communities in the Valley, including patches of natural vegetation, such as trees and shrubs that may be used by Covered Species, and provide large, contiguous blocks of open space. Implementation of Objective GGS-1.1 for giant garter snake will ensure that at least 2,000 of these 8,240 acres will be rice land (or wetland equivalent). The remaining 6,240 acres will not be required to be maintained in any particular crop type, and will not count toward permit requirements or habitat commitments for mitigation for any Covered Species. Although these lands will not count towards mitigation requirements, they will help preserve open space by preventing development and will allow for movement of some species through the agricultural landscape between patches of natural communities. Because there is no requirement for particular crop types on these 6,240 acres, the Placer Conservation Authority can also preserve natural communities rather than agricultural land to meet this commitment.

2.11.2 Reduction in Habitat Function

Indirect effects from Covered Activities often reduce habitat function for Covered Species in natural communities adjacent to the Covered Activity, especially where natural communities are adjacent to urban development. Adverse indirect effects include changes in hydrology, increased human disturbance, increased levels of noise and lighting, increased numbers of urban-adapted predators (e.g., skunks and raccoons), increased numbers of domestic predators (e.g., dogs and cats), and increased vehicle-related disturbance. Increased human presence could also facilitate other indirect effects such as the spread of disease, increase in non-native invasive species, and increased risk of wildfire.

Roads, in particular, can result in disproportional indirect effects because of their large edge-to-area ratio, and because they often transect otherwise intact habitat. Roads can increase the risk

for wildfire and the spread of invasive species. New and expanded roads and associated traffic can create noise and light, and result in vehicle strikes. Streams and wetlands close to new roads may be indirectly affected by increased sedimentation or runoff of oil and grease or other pollutants.

Hydrology. Urban development, roads, and other related infrastructure can alter hydraulic conditions in vernal pool complex and grasslands by creating a barrier to flow, creating additional flow into existing vernal pool constituent habitats, and/or diverting flow into artificial channels. This alteration notably occurs at the edge of urbanization, where drainage or other engineered improvements are typically installed. Rural development and drainage control can also modify local hydrology, particularly in the relatively flat, agricultural land of the Valley where natural drainage is poor and where low relief makes it easy to alter natural drainage (see Plan Section 4.3.3.1 for details).

Indirect effects to aquatic/wetland and riverine/riparian communities include increased habitat fragmentation and sedimentation in aquatic habitat resulting from urban and rural development. In-stream structures (i.e., pilings, footings, culverts, etc.) could disrupt flows and result in changes in hydrology that result in adverse effects to riverine and riparian habitat. In addition to disrupting flow, in-stream structures can trap up-stream sediment and vegetation, which can further disrupt flow and may also result in increased erosion downstream. Although expansion of existing bridges or construction of new bridges may leave the stream channel intact, increased shading can lead to impacts to shaded stream and riparian habitat. New pedestrian bridges in areas open to recreation increase human access to habitats potentially occupied by Covered Species. In addition, Covered Activities in upper watersheds could result in effects to the amount and quality of water in aquatic habitat downstream.

Light and Noise. Light and noise can alter the ecology of habitat adjacent to development, especially if the edge-to-area ratio is high. Flashes of light can temporarily affect vision of some wildlife species and increase vulnerability to predation. Longer-term night lighting can be disorienting, and cause wildlife to modify their behavior (Longcore and Rich 2004). Increased noise can also render surrounding habitat less suitable. Continuous increased noise could interfere with the ability to detect important species-specific sounds, such as warning or mating calls (Dooling and Popper 2007, Francis and Barber 2013) and sporadic noise may act as a hazing agent to wildlife.

Invasive Plants. Ground disturbance from Covered Activities can provide areas for colonization by non-native invasive plant species, which can then invade adjacent habitat. Increased human presence adjacent to urban development and roadways can also result in the introduction of invasive plant species. Within areas used for recreation, trails can be a source of invasive plant species that are transported by trail users. Invasive plant species can outcompete and displace native plants, displace native wildlife, and alter the ecosystem processes of natural communities, such as nutrient cycling, soil hydrology, and frequency of wildfires (Bossard et al. 2000).

Human Activity. Increased human activity in habitat adjacent to urban development and in remaining habitat in rural areas can decrease habitat suitability. Human presence in these areas can trample vegetation, compact soil, introduce invasive plant species, increase disturbance to animals, and increase the risk of wildfire. Public use of parks and open space also increases

disturbance from human activity, particularly if used inappropriately (e.g., off-trail hiking, illegal dumping).

Invasive Animals. Habitat adjacent to urban development may see increases in urban-adapted native and non-native wildlife species, including increased numbers of raccoons, skunks, opossums, rats, house mice, crows, bullfrogs and feral cats and dogs. These types of species can thrive in fragmented, disturbed, or otherwise marginal habitats, and result in increased risk of disease and predation for native species; they may also outcompete native species for resources. Recreational use in open space can also result in increased presence of invasive animal species and recreational trails can facilitate predator movement.

See Section 2.10.2.3. *Indirect Effects* of this Biological Opinion for a summary of how the acreage of natural communities that will experience increased indirect effects such as those described above was estimated. Table 2 provides estimates of indirect effects on natural communities for the four categories of indirect effects that are quantified; these effects are further described below. Where it is not possible to quantify indirect effects, these effects are described qualitatively for each Covered Species.

Table 2. Estimated extent of indirect effects, in acres.

Natural Community	Valley Potential Future Growth Area²	Valley Conservation and Rural Development Area	Border between Conservation and Rural Development Area/Potential Future Growth Area in the Valley	Foothills Increased Rural Density
Vernal Pool Complex	1,220	70	506	183
Grassland	340	28	91	4,802
Aquatic/Wetland Complex	12	3	37	303
Riverine/Riparian Complex	15	3	10	579
Valley Oak Woodland	3	3	0	102
Oak Woodland	110	3	1	5,942
Rice Agriculture	180	50	96	0
Field, Orchard and Vineyard Agriculture	90	18	4	704
All Communities	1,970	178	744	12,615

Indirect Effects in the Valley Potential Future Growth Area. If all future covered development in the Valley Potential Future Growth Area were to take place on natural communities with a low level of existing indirect effects, 1,970 acres that currently have low to no indirect effects would

² On-site indirect effects on vernal pool wetlands in avoided habitat within the Valley Potential Future Growth Area are considered separately and are not included here.

be subject to new indirect effects. However, many of the areas subject to off-site indirect effects within the Valley Potential Future Growth Area will ultimately be subject to direct effects or to on-site indirect effects. Therefore, these effects are assumed to be captured as direct and indirect effects associated with subsequent Covered Activities by the end of the permit term and are not considered further in this Biological Opinion.

Indirect effects in the Valley Conservation and Rural Development Area. Approximately 178 acres in the Valley Conservation and Rural Development Area will be adjacent to covered development and will be indirectly effected. If all 178 acres of indirect effects occur on lands not currently indirectly affected, this would represent a two percent increase in the area that the Plan categorizes as highly impacted by indirect effects.

Border between Conservation and Rural Development Area/Potential Future Growth Area in the Valley. The border between the Valley Potential Future Growth Area and the Valley Conservation and Rural Development Area will ultimately become the primary intersection of urban development in the Potential Future Growth Area and natural communities in the Conservation and Rural Development Areas, including natural communities in existing protected areas and the future Reserve System. Of the 1,651 acres of natural and semi-natural communities mapped along the border between the Potential Future Growth Area and the Conservation and Rural Development Areas (see Section 2.10.2.3, *Indirect Effects* of this Biological Opinion for methods used for mapping), the Plan estimates that 744 acres of land with low to moderate existing indirect effects will be subject to increased indirect effects from Covered Activities. Of this, not more than 185 acres of land with low existing levels of indirect effects would be affected by the end of the permit term.

Indirect Effects from the Increase in Rural Density. Covered Activities in the Foothills will increase rural densities resulting in indirect effects when parcels are subdivided. While the rural development footprint may not be as extensive as urban development, the resulting indirect effects are higher in rural areas than in urban areas because the existing landscape is generally less disturbed to begin with and because dispersed patterns of development maximize the individual influence of each home. In addition, rural and private roads create corridors for invasive plants to disperse along roadsides and attach to vehicles, thus affecting native vegetation. Rural roads, often privately constructed, can also contribute to erosion and sedimentation in the stream system. Over 6,000 acres of oak woodland and valley oak woodland may be subject to indirect effects from subdivision of the Foothills (see Table 2).

On-site indirect effects on vernal pool wetlands. Indirect effects from on-site avoidance of vernal pool wetlands is considered separately from the categories described above and is not included in Table 2. In some cases, Covered Activities may avoid affecting vernal pool constituent habitats on site if they comply with Plan *Community Condition 1.1, Avoidance for Vernal Pool Constituent Habitat Wetlands*. However, these avoided vernal pool constituent habitats may still be subject to indirect effects where their hydrology is affected by adjacent ground disturbance. In order to limit habitat fragmentation and isolation resulting from avoided areas that are adjacent to and/or surrounded by development, the Plan sets a cap on the acreage of indirect effects that may result from on-site avoidance. The maximum on-site indirect effects to vernal pool constituent habitats allowed under the Plan is 66 acres; this includes 56 acres within the Valley Potential Future Growth Area and 10 acres within the Valley Conservation and Rural Development Area.

Conservation Actions. Although conservation actions in support of the Conservation Strategy will be implemented to benefit species and natural communities, they may result in unintended reductions in habitat function. For example, equipment used during conservation actions could transport invasive species into new areas of the Reserve System. Maintenance of firebreaks could alter vegetation structure by allowing the encroachment of invasive species. The creation or restoration of vernal pools within a vernal pool complex with existing vernal pool constituent habitat could alter the hydrology of the existing pools. Plan *Conservation Measure 2, Manage and Enhance the Reserve System* describes how reserve unit management plans will be developed and include measures to minimize reductions in habitat function resulting from conservation actions. In addition, the Plan requires that vernal pools will only be created or restored in areas where they will be isolated hydrologically from existing pools, and when adequate amounts of surrounding upland habitat are protected. Indirect effects resulting from conservation actions are not quantified, but will be minimal based on the implementation of these measures.

Within the Valley, indirect effects will primarily be to vernal pool complex. In the Foothills, most indirect effects will be to oak woodlands. All indirect effects quantified in the sections above will be tracked by the Placer Conservation Authority to ensure estimates of these effects are not exceeded. However, the Conservation Strategy in the Plan only includes specific mitigation and stay ahead provisions for on-site indirect effects on vernal pool wetlands. Mitigation for off-site indirect effects is captured by the Plan's mitigation for regional development.

The Conservation Strategy includes measures to minimize indirect effects through actions such as the creation of buffer zones and development of design guidelines that reduce effects from development on natural lands (e.g., *General Condition 2, Conservation Lands: Development Interface Design Requirements*). Reserve management plans will be developed for each Plan reserve, with specific restrictions on recreation to avoid and minimize effects on Covered Species and their habitats (see Plan Section 5.3.2.1.2, *Content of Reserve Management Plans*).

In order to minimize and offset indirect effects, the Plan includes landscape level biological goals intended to reduce indirect effects that could result in the reduction of habitat function. The Reserve System will be developed according to reserve design principals to create a Reserve System consisting of large contiguous blocks of preserved habitat that buffer urban effects and reduce the urban-reserve interface boundary (see Plan Section 5.3.1.4, *CMI L-2, Reserve Acquisition Strategy*). The establishment of the Reserve System will not only reduce indirect effects to land within the Reserve System, but will preclude additional indirect effects from occurring on surrounding lands by preventing development on Reserve System lands. In the Foothills Conservation and Rural Development Area, the establishment of the Reserve System will significantly reduce subdivision potential. In addition, limiting avoidance of isolated patches of habitat within developed areas in the Valley Potential Future Growth Area will reduce the extent of indirect effects from Covered Activities.

The following landscape level biological goals and objectives (and their associated conservation measures, which are not listed here, see Plan Table 5-8) from Chapter 5 of the Plan will minimize reduction in habitat function within Plan Area as a whole:

- Goal L-1, A Reserve System with representative natural communities along a range of environmental gradients large enough to support ecosystem function, sustain populations of Covered Species, maintain or increase biological diversity of native species, and accommodate changing environmental conditions.
- Objective L-1.1, Establish a Large, Interconnected Reserve System.
- Goal L-2, Reserve System connectivity to sustain the effective movement and genetic interchange of organisms between natural communities in a manner that maintains the ecological integrity of the natural communities within the Plan Area.
- Objective L-2.1, Protect Habitat Linkages.
- Objective L-2.2, Maintain and Enhance Reserve System Permeability.
- Objective L-2.3, Establish East–West Corridors.
- Objective L-2.4, Conserve North–South Connectivity.
- Objective L-2.5, Conserve Upland Natural Communities Surrounding Aquatic/Wetlands Complex Natural Communities.
- Goal L-3, Ecological processes and conditions that sustain and reestablish natural communities and native species.
- Objective L-3.1, Implement Low Impact Development Standards. Implement Low-Impact Development Standards for Covered Activities in the Plan Area.
- Objective L-3.2, Reduce Invasive Non-native Species and Increase Native Species.
- Objective L-3.3, Manage Fire.

2.11.3 Effects on Covered Species Individuals

Ground disturbance will be a primary cause of injury and mortality to Covered Species. The majority of ground disturbance from Covered Activities will be from urban and rural development. Within the development footprint, Covered Species could be crushed, buried, or otherwise injured or killed. Similarly, individuals inhabiting areas affected by temporary construction-related activities associated with development, such as staging, stockpiling, and driving could be injured or killed. The introduction of contaminants or inadvertent litter associated with construction-related activities could also result in injury, harm, or mortality to Covered Species that come into contact with introduced materials. Construction excavations may also trap some Covered Species, and could result in injury or mortality.

Covered Activities associated with Regional Public Programs such as transportation programs, road maintenance, water treatment and supply, park and trail maintenance, in-stream programs, and operation and maintenance activities (i.e., sediment removal and vegetation clearing) that involve the use of heavy equipment could also injure or kill Covered Species. Temporary

dewatering from in-stream activities could result in the need to handle and relocate Covered Species salvaged from the dewatered area, which could cause stress or mortality. Water fluctuations in canals as a result of cleaning and flushing activities could result in the loss of amphibian egg masses to desiccation or wash away eggs or juveniles of aquatic species. In general, the extent of these types of effects will be small relative to that anticipated for urban and rural development.

Although some individuals may survive initial site disturbance and habitat loss by escaping into adjacent areas, they may ultimately die as a result of starvation, exposure, or predation if such areas do not provide suitable habitat. Even if these animals reach other habitats, they may still face competition and reproductive exclusion if such habitats are already at carrying capacity. New or increased traffic associated with new developments or road construction also increases risks of injury or mortality to some Covered Species.

Although activities associated with the implementation of the Conservation Strategy may result in death, injury, or harm to Covered Species, effects to Covered Species individuals as a result of these activities will be minimal. Vegetation management to reduce fire hazard, eradicate exotic plants, or remove trees hazardous to recreationists may disturb or inadvertently injure or kill Covered Species. Covered branchiopod cysts may be translocated to restored and created pools on the Reserve System. Although collecting cysts from pools about to be affected by Covered Activities will prevent cysts from being destroyed by ground disturbance, translocation could cause injury or mortality. In addition, monitoring and research activities required by the Plan (see Plan Chapter 7, *Monitoring and Adaptive Management Program*) may affect Covered Species. For most species, surveys will primarily be conducted using visual and auditory detection. However, trapping and handling may be necessary to monitor some species, such as giant garter snake and vernal pool branchiopods. Trapping and handling could result in injury or death of individuals. However, the long-term benefits gained through conservation actions, monitoring, and limited recreation are anticipated to far exceed the effects of the incidental take that may occur.

Recreation in County and City parks and on some of the Plan's Reserve System lands may have effects to Covered Species. While the Plan includes a number of measures to prevent effects to Covered Species from recreation, in particular on Reserve System lands, they may not completely prevent it. The Plan covers take of Covered Species resulting from the initial construction and presence of recreational facilities. The Plan does not anticipate that legal and appropriate use of these recreational facilities will result in take of covered species from actual recreational users. Therefore, if there appears to be the possibility of take resulting from recreational use of facilities on Reserve System lands, that recreational use will need to be modified to ensure that take of Covered Species will not occur pursuant to this Plan or be discontinued. Take from recreational uses, if any, will be addressed separately.

Conservation Actions. In addition to the Plan's landscape-level biological goals to develop a Reserve System that will preserve and manage large interconnected blocks of land to offset impacts, by setting caps on the extent of natural communities that may be affected (see Table 1 and Plan Table 4-1), the Plan limits ground disturbance-related death, injury, and harm. Habitat enhancement, restoration, and creation will also help offset the effects of the loss of individuals by improving habitat conditions for Covered Species currently occupying marginal habitat, or by

creating colonization opportunities for Covered Species currently residing in adjacent areas. Improved habitat conditions will enhance breeding, sheltering, and feeding opportunities for future generations.

In addition, Plan Section 6.3.5, *Conditions to Minimize Effects on Covered Species* describes measures that are required when implementing Covered Activities in order to minimize the potential for Covered Species to be harmed, injured or killed. Specific goals, objectives and conditions relevant to a particular species are listed in the following sections.

2.12 Effects to Covered Species

2.12.1 Swainson's Hawk

Habitat Loss and Fragmentation. Covered Activities will result in the loss of nesting and foraging habitat for Swainson's hawk. Within the action area, grassland, vernal pool complex, and to a lesser extent, agricultural landscapes provide foraging habitat for Swainson's hawk. The Plan's model for Swainson's hawk foraging habitat includes vernal pool complex, grassland, pasture, and alfalfa and row crops in the Valley. Out of a total of 54,574 acres of modeled foraging habitat in the action area, 16,267 acres (approximately 30 percent) will be lost as a result of Covered Activities. An additional 602 acres of foraging habitat will be temporarily affected by Covered Activities.

The Plan's model for nesting habitat for Swainson's hawk includes riparian and valley oak woodland in the Valley. Modeled nesting habitat occurs mostly within the stream system. Other small woodlands and isolated trees could also provide suitable nest sites, but are not captured in modeled habitat as they occur at too small a scale to be included in land-cover mapping. Out of 1,968 acres of modeled nesting habitat, 149 acres (approximately 8 percent) will be lost to Covered Activities. Another 10 acres of nesting habitat will be temporarily affected.

The loss of foraging and nesting habitat as a result of Covered Activities will reduce the amount of habitat available for Swainson's hawk in the action area. The loss and fragmentation of foraging habitat, particularly foraging habitat near nest sites, can result in reduced carrying capacity and reduced reproductive success. Fragmentation of habitat may result in hawks needing to travel greater distances between nesting and foraging habitat, which can also reduce reproductive success. The loss of nesting habitat could result in higher competition for remaining nest sites and greater competition for other resources (i.e. foraging habitat or prey) if nest sites are located closer together potentially resulting in diminished survival and fecundity.

Reduction in Habitat Function. The quality of nesting and foraging habitat for Swainson's hawks adjacent to new urban or rural development may be reduced by the proximity to and associated activities from human activity, such as increased vehicle-related disturbance (e.g., of breeding habitat near roads), increased risk of wildfire, and increased noise and light pollution. Changes in land use that reduce the prey base for Swainson's hawks could also adversely affect Swainson's hawks. Covered Activities may result in up to 3,416 additional acres of grassland and field agricultural land being located within 250 feet of new urban development. In addition, when urban development surrounds nesting habitat, it is likely to render the avoided nesting habitat less functional by separating the nesting habitat from foraging habitat. Reproductive success of

Swainson's hawks nesting in urban areas is lower than those nesting in rural landscapes (England et al. 1995).

Effects on Individuals. With the implementation of Species Condition 1, *Swainson's Hawk* (see section 6.3.5.6 of the Plan) Covered Activities are unlikely to directly kill or injure any Swainson's hawk individuals. However, factors listed above (habitat fragmentation and degradation) could indirectly result in injury or mortality of individuals. Increased disturbance of nesting hawks in areas adjacent to new development could result in nest abandonment, potentially resulting in the loss of eggs or young. Increased traffic and additional above-ground transmission lines associated with covered projects could also result in injury or mortality from vehicle strikes or electrocution.

Conservation Actions. In addition to natural community-level goals and objectives from Chapter 5 of the Plan that will benefit Swainson's hawks, the following biological goal and objectives in the Plan and their associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to Swainson's hawk and will result in several beneficial consequences to Swainson's hawk:

- Goal SWHA-1, Habitat to provide for a sustained population of Swainson's hawks in the Plan Area.
- Objective SWHA-1.1, Protect Swainson's Hawk Nest Trees.
- Objective SWHA-1.2, Protect Swainson's Hawk Foraging Habitat.
- Objective SWHA-1.3, Enhance Foraging Habitat.
- Objective SWHA-1.4, Protect Isolated Trees.

Implementation of natural community-level goals and objectives will protect and restore riverine/riparian and valley oak woodland natural communities, such that a total of 1,268 acres of modeled Swainson's hawk nesting habitat will be protected and 720 acres of riparian habitat will be restored (see Plan Table 5-6). In addition, grasslands and vernal pool complexes that provide Swainson's hawk foraging habitat will be protected and restored such that a total of 17,003 acres of foraging habitat will be protected and an additional 3,920 acres of foraging habitat will be restored (see Plan Table 5-6). At least four active nest trees (a nest tree is considered active if it has been used for nesting by Swainson's hawks within the previous 5 years) will be protected within the Reserve System and at least 741 acres of modeled foraging habitat will be protected surrounding each protected active nest tree. The Placer Conservation Authority will also protect at least 20 isolated trees with the potential to be used as nesting sites for Swainson's hawk, and will enhance the quality of foraging habitat in the Reserve System.

Implementation of measures such as *General Condition 2, Conservation Lands: Development Interface Design Requirements* will minimize the effects of urban development on Swainson's hawk habitat and individuals within the Reserve System. The Plan's requirements to avoid effects to active nest sites (see *Species Condition 1, Swainson's Hawk* from Chapter 6 of the

Plan) will prevent Swainson's hawk individuals from being directly harmed, injured or killed by Covered Activities.

Conclusion. The action area is located along the eastern edge of the Swainson's hawk distribution in the Sacramento Valley and contains only a small portion of the range of the Central Valley population of Swainson's hawk. Most of the recorded nest sites in the action area are located within the Reserve Acquisition Area where most Reserve System land will be acquired, and no active nests have been documented within the Potential Future Growth Area since 2003 (California Natural Diversity Database 2019). In addition, most Swainson's hawk modeled nesting habitat in the action area is located within the Stream System and measures in the Plan to avoid impacts to the Stream System will also minimize the loss of Swainson's hawk nesting habitat.

While Covered Activities will result in a substantial loss of foraging habitat, and to a lesser extent in the loss of nesting habitat, the loss of habitat for Swainson's hawk will be offset by the preservation of large interconnected areas of foraging habitat in proximity to protected nesting habitat. These factors, combined with the relatively low density of Swainson's hawks in the action area, make it unlikely that the loss of habitat will appreciably reduce the Swainson's hawk population in the action area. Implementation of the Conservation Strategy will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.2 California Black Rail

Habitat Loss and Fragmentation. Covered Activities will result in the loss of California black rail habitat in the action area, specifically 105 acres of modeled habitat out of a total of 1,112 acres of modeled habitat in the action area. Covered Activities will also result in temporary effects to 41 acres of fresh emergent marsh. The loss of fresh emergent marsh will reduce the amount and extent of rail habitat across the landscape, potentially reducing the carrying capacity for black rail in the action area. The loss of suitable habitat will also fragment remaining habitat, potentially reducing the ability for rails to disperse throughout the action area and into other populations. Should existing populations become isolated due to habitat loss and fragmentation, the isolated population could become more susceptible to stochastic events. In addition, because black rails in the Sierra Nevada foothills, including within the action area, are thought to occur as a metapopulation, maintained, in part, through colonization of unoccupied sites (Richmond et al. 2008), the loss of unoccupied habitat could adversely affect the stability of the metapopulation.

Reduction in Habitat Function. The habitat quality for California black rail adjacent to new urban or rural development may be reduced by increased disturbance from people, by an increase in predators associated with development (e.g., house cats, raccoons), and by the use of pesticides and other vector control methods in developed areas that could reduce prey availability. Approximately 457 acres of aquatic/wetland complex will be indirectly effected by adjacent growth and urban edge in the Valley, and fragmentation in the Foothills. Rural and urban development will also increase demands on water, and could result in a decrease in the availability of surface water and groundwater, thereby reducing the amount of water in fresh emergent marsh habitat for California black rail. In addition, activities that remove emergent

vegetation, such as flood control maintenance and agricultural operations, may degrade wetlands by limiting the dense vegetation that rails require.

Effects on Individuals. With the implementation of Species Condition 2, described in Section 6.3.5.7 of the Plan, Covered Activities are unlikely to directly kill or injure black rail individuals. However, because black rails are resident within the action area, there is a risk to black rail individuals that occupy emergent wetland habitat that will be affected by Covered Activities. Eggs and chicks are most susceptible to injury and death as a result of land clearing, but adults are also susceptible to injury during molt in July and August when adults become flightless. Implementation of Species Condition 2 will limit clearing or dewatering of occupied habitat to between September 15 and February 1, thereby reducing the risk of injury or mortality from Covered Activities to these life stages. Increased disturbance of nesting rails in areas adjacent to new development could result in nest abandonment, potentially resulting in the loss of eggs or young. Use of pesticides is not a Covered Activity under the Plan; therefore, Covered Activities are not expected to result in injury or mortality to California black rail from contaminated prey.

Conservation Actions. In addition to the biological goals and objectives from Chapter 5 of the Plan listed in sections above for aquatic/wetland complex that will benefit California black rail, the following biological goal and objectives in the Plan and associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to California black rail and will result in several beneficial consequences to the rail:

- Goal BLRA-1, A Sustained Population of California Black Rail within the Plan Area.
- Objective BLRA-1.1, Protect, Restore/Create, and Manage and Enhance California Black Rail Habitat.

Implementation of these goals and objectives will protect and restore aquatic/wetland complex, such that a total of 256 acres of modeled California black rail habitat will be protected and 175 acres of habitat will be restored (see Plan Table 5-6). Of the modeled habitat that is protected and restored, a minimum of five fresh emergent marshes at least two acres in size must be protected and five marshes at least two acres in size must be restored. The Plan also sets various benchmarks for occupancy of black rail habitat in the Reserve System during the permit term and limits the take of occupied rail habitat based on the number of sites occupied by rails within the Reserve System (see requirements in Section 5.3.2.6.2, *California Black Rail* for details). At least half of the protected and restored marshes must be occupied by black rails by Year 45 of the permit term to achieve goal BLRA-1.

Implementation of measures such as *General Condition 2, Conservation Lands: Development Interface Design Requirements* will minimize the effects of urban development on black rail habitat and individuals within the Reserve System. Implementation of *General Condition 1, Watershed Hydrology and Water Quality* will minimize the effects of increased water demand on California black rail and its habitat. The Plan's requirements to avoid effects to occupied marshes during the breeding season (see *Species Condition 2, California black rail* from Chapter 6 of the Plan) will prevent black rail individuals from being directly harmed, injured or killed by Covered Activities.

Conclusion. The action area is located along the southern boundary of the Sierra Nevada Foothills metapopulation of California black rail, the core of which is located to the north in Yuba County. The action area supports a relatively low density of California black rail. While Covered Activities will result in a loss of habitat and reduction of habitat function for black rail, impacts to habitat will be offset by the preservation and restoration of habitat for black rail such that at least 10 fresh emergent marshes suitable for supporting California black rail are restored/created, protected, managed, and enhanced. Plan occupancy requirements will ensure that habitat occupied by black rails will be preserved to compensate for the loss of occupied rail habitat. It is anticipated that implementation of the Conservation Strategy will result in the persistence and potentially the expansion of the metapopulation of California black rails in the action area. This will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.3 Western Burrowing Owl

Habitat Loss and Fragmentation. Covered Activities will result in the loss of year-round habitat for western burrowing owl, which includes vernal pool complex, grassland, oak woodland savanna, pasture, and habitat adjacent to row crops, rice, and alfalfa. Of the total of 55,101 acres of modeled, year-round habitat for burrowing owl in the action area, Covered Activities will result in the permanent loss of 16,444 acres of habitat. Covered Activities will also result in temporary impacts to 609 acres of modeled habitat. The loss of foraging and nesting habitat as a result of Covered Activities will reduce the amount of habitat available for burrowing owl in the action area. The loss and fragmentation of foraging habitat, particularly foraging habitat near nest sites, can result in reduced carrying capacity and reduced reproductive success as a result of spending more time foraging and not tending to offspring. Fragmentation of habitat may result in owls needing to travel greater distances between nesting and foraging habitat, which can also reduce reproductive success. The loss of nesting habitat could result in higher competition for remaining nest sites and greater competition for other resources (i.e., foraging habitat or prey) if nests sites are located closer together, potentially resulting in diminished survival and fecundity.

Reduction in Habitat Function. The quality of habitat for burrowing owls adjacent to new urban or rural development may be reduced by increased disturbance from people, increased risk of wildfire, increased noise and/or light, habitat fragmentation, rodent abatement programs, and increased populations of predators that thrive in urbanized habitats. The assessment of new urban edge shows that as many as 3,416 acres of grassland and agricultural land in the Valley may have new urban development within the 250-foot disturbance radius used in that analysis. Owls may avoid areas with high levels of human disturbance, or high levels of noise and/or light. Rodent abatement programs reduce prey abundance, and may eradicate rodents from suitable foraging habitat.

Effects on Individuals. With the implementation of Species Condition 3, *Western Burrowing Owl* (see Section 6.3.5.8 of the Plan), Covered Activities are unlikely to directly kill or injure western burrowing owl individuals. However, measure Burrowing Owl 4, which describes passive exclusion of owls from burrows that cannot be avoided during the non-breeding season, could result in injury or death of individuals if they are not able to locate suitable habitat after being excluded from a project site. Additionally, factors listed above (habitat fragmentation and degradation) could indirectly result in injury or mortality to individuals. Increased disturbance of

nesting owls in areas adjacent to new development could result in nest abandonment, potentially resulting in the loss of eggs or young. Increased traffic associated with covered projects could also result in injury or mortality from vehicle strikes. Use of pesticides is not a Covered Activity under the Plan; therefore, Covered Activities are not expected to result in injury or mortality to burrowing owl from contaminated prey.

Conservation Actions. In addition to the biological goals and objectives from Chapter 5 of the Plan listed in sections above for natural communities that will benefit burrowing owls, the following biological goal and objective in the Plan and associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to burrowing owl and will result in several beneficial consequences to the owl:

- Goal BUOW-1, Habitat to maintain or increase the number of overwintering western burrowing owls, and to promote the expansion of a breeding population of burrowing owls.
- Objective BUOW-1.1, Protect and Manage Ground Squirrel Colonies.

Implementation of these goals and objectives will protect and restore vernal pool complex, grassland and oak woodland natural communities, such that a total of 17,129 acres of modeled burrowing owl habitat will be protected and 4,126 acres of habitat will be restored (see Plan Table 5-6). Recent nesting records for burrowing owl in the action area are located on Swainson's Preserve, which is proposed to be incorporated into the Reserve System. In addition, the Plan commits to either protecting ground squirrel colonies or installing and maintaining artificial burrows on reserve lands (see requirements in Plan Section 5.3.2.4.2, *Western Burrowing Owl* for details).

Implementation of measures such as *General Condition 2, Conservation Lands: Development Interface Design Requirements* will minimize the effects of urban development on burrowing owl habitat and individuals within the Reserve System. The Plan's requirements to avoid effects to active nest sites (see *Species Condition 3, Western Burrowing Owl* from chapter 6 of the Plan) will prevent burrowing owl individuals from being directly harmed, injured or killed by Covered Activities.

Conclusion. The action area is located along the eastern edge of the burrowing owl's distribution in the Sacramento Valley and contains only a small portion of the total range for western burrowing owl. There are few records of burrowing owl within the action area and the one documented breeding pair in the action area is located within an existing reserve. While Covered Activities will result in a substantial loss of modeled habitat for burrowing owl, the amount of habitat loss is likely overestimated because the habitat model is very broad and modeled habitat likely includes areas that do not support features necessary for burrowing owls that cannot be modeled on a regional scale (for example suitable burrows). The loss of habitat for burrowing owl will be offset by the preservation of large interconnected areas of foraging habitat in proximity to protected nesting habitat, and the provision of burrows suitable for use by owls within preserved habitat. While preservation of modeled habitat for burrowing owl may also represent an overestimate of preserved habitat that provides all the features necessary for burrowing owls, the implementation of Plan measures to protect and expand ground squirrel

populations and install and maintain artificial burrows will ensure that modeled habitat preserved for burrowing owls will include necessary habitat features. In addition, the Plan will prioritize the protection of sites known to be occupied by burrowing owls. These measures will help ensure that more suitable habitat for burrowing owl is preserved than is lost and that preserved habitat provides habitat features necessary to support occupancy by burrowing owls. The protection and enhancement of habitat for burrowing owls within the Reserve System is anticipated to provide sufficient habitat to maintain or increase the burrowing owl population within the action area. Implementation of the Conservation Strategy will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.4 Tricolored Blackbird

Habitat Loss and Fragmentation. Covered Activities will result in the loss of nesting and foraging habitat for tricolored blackbird. The Plan's model for tricolored blackbird foraging habitat includes annual grasslands, vernal pool complexes, seasonal wetlands, riparian, and agricultural fields below 300 feet elevation. Out of a total of 60,974 acres of modeled foraging habitat in the action area, 17,015 acres (approximately 28 percent) will be lost as a result of Covered Activities. An additional 836 acres of foraging habitat will be temporarily affected by Covered Activities.

The Plan's model for nesting habitat for tricolored black bird includes the aquatic/wetland land cover type below 300 feet in elevation. However, breeding habitat for tricolored blackbird is difficult to model on a regional scale because breeding colonies require open accessible water within 1,500 feet of a colony site; a protected nesting substrate, including either flooded or thorny or spiny vegetation (e.g., cattails, bulrushes, and blackberries); and suitable foraging habitat providing adequate insect prey within a few miles of the nesting colony. Nesting habitat for tricolored blackbird is scattered in small patches throughout the Valley and lower Foothills and is usually associated with aquatic/wetland complex lands in the Stream System. Out of 633 acres of nesting habitat estimated to occur within the Plan Area, 55 acres (approximately 9 percent) will be lost to covered activities. Another 103 acres of nesting habitat will be temporarily affected. Species Condition 4, *Tricolored Blackbird*, will ensure that loss of nesting habitat being used by nesting colonies will not take place during the nesting season.

The loss of foraging and nesting habitat as a result of Covered Activities will reduce the amount of habitat available for tricolored blackbird in the action area. The effect of this loss on tricolored blackbird colonies will depend on the location of colony sites in relation to the habitat that is lost. Due to the patchy distribution of habitat in the action area and the mobility of this species, it is difficult to assess impacts of this habitat loss to tricolored blackbird colonies in the action area. However, five recently active colony sites have been documented in the Potential Future Growth Area, and Covered Activities are likely to directly or indirectly affect these colonies.

The loss and fragmentation of foraging habitat, particularly foraging habitat within 3 miles of breeding colony sites, can result in reduced carrying capacity and reduced reproductive success. In addition to the loss of nesting and foraging habitat, the loss of open water within 1,500 feet of colony sites can reduce the viability of a breeding site. Fragmentation of habitat could result in blackbirds needing to travel greater distances between nesting and foraging habitat, which could reduce reproductive success or result in colony failure.

Reduction in Habitat Function. The quality of nesting and foraging habitat for tricolored blackbird adjacent to new urban or rural development or other Covered Activities may be reduced if it results in increased populations of predators of eggs and chicks such as black-crowned night-herons (*Nycticorax nycticorax*), common ravens (*Corvus corax*), and coyotes (*Canus latrans*). Tricolored blackbirds may be sensitive to pesticides (Hosea 1986, Beedy and Hayworth 1992), and could be indirectly affected by mosquito or other pest control in rural and urban areas near occupied habitat. Other potential indirect effects to tricolored blackbirds and their habitat near urban and rural development include increased disturbance from people, increased vehicle-related disturbance (e.g., of breeding habitat near roads), increased risk of wildfire, and increased noise and light pollution. Up to 2,827 acres of grassland and agricultural land may have new urban development within the 250-foot disturbance radius by the end of the permit term.

Effects on Individuals. With the implementation of *Species Condition 4, Tricolored Blackbird* (see Section 6.3.5.9 of the Plan), Covered Activities are unlikely to directly kill or injure tricolored blackbird individuals. However, factors listed above (habitat loss, fragmentation and degradation) could indirectly result in injury or mortality to individuals. Increased disturbance of nesting colonies in areas adjacent to new development could result in nest abandonment, potentially resulting in the loss of eggs or young. Use of pesticides is not a Covered Activity under the Plan; therefore, Covered Activities are not expected to result in injury or mortality to tricolored blackbird from contaminated prey. Tricolored blackbirds are highly mobile and are unlikely to be injured or killed by equipment used for Covered Activities.

Conservation Actions. In addition to the biological goals and objectives from Chapter 5 of the Plan listed in sections above for natural communities that will benefit tricolored blackbird, the following biological goal and objectives in the Plan and associated conservation measures (see Plan Table 5-8) will further reduce and offset effects to tricolored blackbird and will result in several beneficial consequences to the species:

- Goal TRBL-1, Habitat for a sustained population of tricolored blackbird in the Plan Area.
- Objective TRBL-1.1, Protect, Manage, and Enhance Tricolored Blackbird Nesting Habitat.
- Objective TRBL-1.2, Protect, Restore, Manage, and Enhance Tricolored Blackbird Foraging Habitat.
- Objective TRBL-1.3, Protect Tricolored Blackbird Colony Sites.
- Objective TRBL-1.4, Protect, Restore, Manage, and Enhance Tricolored Blackbird Foraging Habitat near Colony Sites.
- Objective TRBL-1.5, Protect and/or Restore/Create Open Water near Tricolored Blackbird Colony Sites.
- Objective TRBL-1.6, Restore Tricolored Blackbird Nesting Habitat.

Achieving these goals and objectives will preserve at least 187 acres of nesting habitat for tricolored blackbird in the Valley portion of the Reserve System, and protect and restore at least 22,138 acres of foraging habitat located within three miles of protected nesting habitat within the Reserve System. Protection of foraging habitat used by tricolored blackbirds will be prioritized. An additional 87 acres of tricolored nesting habitat will be restored within the Reserve System. Of the 87 acres of nesting habitat to be restored, at least five fresh emergent wetlands that provide suitable nesting habitat for tricolored blackbird will be created or restored. Each of these will be at least 2 acres in size, within 1,640 feet of open water, and have at least 200 acres of preserved adjacent foraging habitat.

In order to achieve Objective TRBL-1.3, at least two tricolored blackbird nesting colonies must be protected within the Reserve System by year 15 of plan implementation and an additional three colonies must be protected by year 40 so that a total of five active or recently active colonies (i.e., colonies have been documented nesting at a site within the prior 10 years) are protected by the end of the permit term. All five protected breeding colony sites must support a minimum of 1,500 individuals in at least one season during the permit term. Open water habitat will be protected, restored or created within 1,640 feet of each protected nest colony site.

Implementation of measures such as *General Condition 2, Conservation Lands: Development Interface Design Requirements* will minimize the effects of urban development on tricolored blackbirds within the Reserve System. With implementation of *Species Condition 4, Tricolored Blackbird* (see Section 6.3.5.9 of the Plan), Covered Activities are unlikely to directly kill or injure any tricolored blackbird individuals.

Conclusion. The action area supports a significant portion of the statewide tricolored blackbird breeding population, is important for late season breeding attempts, and provides connectivity between populations/colonies. Of the 15 active or recently active colony sites found in Plan Area A, six are in the Reserve Acquisition Area, and three or four are already protected in existing reserves. Covered Activities will result in a substantial loss of foraging habitat, and to a lesser extent in the loss of nesting habitat, and will potentially directly or indirectly effect five nest colonies located within the Potential Future Growth Area. Loss of habitat will be offset by the protection, restoration/creation, and enhancement of suitable complexes of habitat for tricolored blackbird on the Reserve System, including the basic requirements for breeding colony sites. Areas known to be used for foraging by tricolored blackbirds will be prioritized for protection and implementation of the Conservation Strategy will ensure that at least 200 acres of foraging habitat is protected adjacent to or in close proximity to each protected breeding colony site. This will help ensure that the foraging habitat preserved for tricolored blackbird is located in areas that support use by the species. This is anticipated to support a sustained population of the species in the action area. This will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.5 Giant Garter Snake

Habitat Loss and Fragmentation. Covered Activities will result in the loss of aquatic and upland habitat for giant garter snake. Within the action area, wetland habitat and canals in the drainage network associated with agricultural fields in the western portion of the Valley provide habitat for giant garter snakes. The Plan's model for giant garter snake aquatic habitat includes ponds,

fresh emergent marsh, flooded rice land, and riverine habitats below an elevation of 100 feet. The model estimates a total of 19,511 acres of aquatic habitat for giant garter snake in the action area, most of which is rice agriculture in the western portion of the Valley. Of this, 1,438 acres (approximately 7 percent) will be lost as a result of Covered Activities. An additional 203 acres of aquatic habitat will be temporarily affected by Covered Activities.

The Plan models upland habitat for giant garter snake as annual grassland, pasture, alfalfa, irrigated pasture, other croplands, vernal pool complex, and row crop below an elevation of 100 feet and within 200 feet of the edge of aquatic habitats. Out of 3,537 acres of modeled upland habitat, 483 acres (approximately 14 percent) will be lost to Covered Activities. Another 22 acres of modeled upland habitat will be temporarily affected.

The loss of habitat as a result of Covered Activities will reduce the amount of habitat available for giant garter snake in the action area. In addition, the loss or fragmentation of suitable aquatic habitat could limit dispersal of snakes into the action area, precluding snakes from reaching suitable habitat and preventing expansion of the species into the action area.

Reduction in Habitat Function. Aquatic and upland habitat for giant garter snake could be degraded by rural and urban development and regional public programs that increase disturbance, introduce new predators or competitors, cause alterations in hydrology, and/or reduce water quality. Increases in severity and frequency of flooding could result from an increase of impervious surfaces related to urban and rural development. Increased flooding could inundate burrows used by overwintering snakes or force snakes to seek new flood refugia during their inactive period. Changes in floodplain configurations for flood control could also eliminate or reduce the availability of refugia for giant garter snakes and reduce dispersal opportunities.

Water quality would be affected by non-point source pollution from rural and urban development, or regional public programs that increase the extent of impervious surfaces that collect pollutants (e.g., fuels and oils) that become suspended in overland flows. Degradation of water quality could affect garter snakes directly through toxicity or indirectly by affecting vegetation or food availability. Runoff from developed areas could result in contamination and sedimentation of nearby giant garter snake aquatic habitat and erosion caused by Covered Activities could cause turbidity and sedimentation of aquatic habitat.

Human encroachment into giant garter snake habitat can result in reduced vegetation for cover or in reduced prey availability. In addition, snakes are sensitive to disturbance and avoid areas where there is high disturbance, especially at basking sites needed for thermoregulation. While suitable habitat adjacent to development may remain intact, increased disturbance could cause snakes to avoid the area or be less successful in the area. Domestic or feral pets, and some native species that compete with or predate on giant garter snakes could expand from development into adjacent suitable habitat and prevent giant garter snakes from becoming established. Because the location and extent of these types of indirect effects are currently unknown, and because giant garter snake is not currently known to occur in the action area, these effects have not been quantified.

Effects on Individuals. Injury or mortality of giant garter snakes is currently unlikely to result from Covered Activities because giant garter snake is not currently known to occur in the action

area. However, if giant garter snakes are found in the action area, or become established in the action area during the permit term, Covered Activities such as vegetation management may crush individuals in basking sites, fill or crush upland burrows or crevices, dewater habitat, and remove prey. Because giant garter snakes utilize small mammal burrows and soil crevices as retreat sites, giant garter snakes may be crushed, buried, or otherwise injured by Covered Activities that also affect adjacent uplands. Giant garter snakes may be struck by construction equipment or other vehicles accessing construction sites.

Conservation Actions. In addition to the biological goals and objectives from Chapter 5 of the Plan listed in sections above for natural communities that will benefit giant garter snakes, the following biological goal and objective in the Plan and associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to giant garter snake and will result in several beneficial consequences to giant garter snakes:

- Goal GGS-1, Protected suitable giant garter snake habitat to facilitate the expansion of giant garter snake into the Reserve System.
- Objective GGS-1.1, Protect and Manage Giant Garter Snake Habitat.

Achieving natural community and species-specific objectives will result in the protection of 2,000 acres of rice (or fresh emergent wetland), which will be managed to provide aquatic and adjacent upland habitat for giant garter snake (see descriptions in Objective GGS-1.1 for details about required management practices). Protection of 2,000 acres of rice and additional protection and restoration of aquatic and wetland natural communities to meet Plan biological objectives will result in the protection of 2,702 acres and restoration of 529 acres of aquatic habitat for giant garter snake and the protection of 1,763 acres and restoration of 449 acres of upland habitat for giant garter snake in the action area (see Plan Table 5-6).

The Plan's requirements to minimize effects to giant garter snake (see *Species Condition 5, Giant Garter Snake* from Chapter 6 of the Plan) will reduce the chance that giant garter snake will be harmed, injured or killed by Covered Activities.

Conclusion. Giant garter snakes are not currently known to occur in the action area and modeled habitat for giant garter snake is restricted to the western side of the Valley, which is largely designated as Reserve Acquisition Area, where there will be fewer impacts from Covered Activities and where acquisition of reserve lands will be focused. A limited amount of aquatic and upland habitat for giant garter snake will be lost as a result of Covered Activities compared with the amount of available habitat. Because giant garter snakes are not currently known to occur in the action area, the Plan's goal of protecting habitat for giant garter snake is intended to facilitate the expansion of this species into the Reserve System by protecting and enhancing habitat. This will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.6 Western Pond Turtle

Habitat Loss and Fragmentation. Covered Activities will result in the loss of suitable western pond turtle habitat in the action area. Western pond turtle mostly use aquatic habitat in the action

area, but also use upland habitat for nesting and occasionally overwintering habitat. Suitable aquatic habitat includes fresh emergent wetlands, seasonal wetland, riverine/riparian, and ponds, while suitable upland habitat is any natural community within 150 feet of suitable aquatic habitat. The proposed action will result in the permanent loss of 750 acres of modeled aquatic habitat and 1,407 acres of modeled upland habitat. Covered Activities will also temporarily affect 250 acres of modeled aquatic habitat and 40 acres of modeled upland habitat. The loss of habitat resulting from Covered Activities could reduce the connectivity between the action area and the populations of western pond turtle in the Central Valley (the action area is on the eastern edge of the species range).

Reduction in Habitat Function. The habitat quality for western pond turtle adjacent to new urban or rural development may be reduced by increased disturbance from people, and through an increase in predators associated with development (e.g., house cats, raccoons). The fragmentation of upland and aquatic habitat, especially by roads, may increase the distance that turtles have to travel to locate suitable nesting locations, increasing the risk of predation or collisions with vehicles on roads. Covered Activities that remove vegetation and basking sites from the edges of wetlands and riparian corridors reduces habitat quality for western pond turtles. In-stream projects may also have adverse effects on western pond turtle by reducing or eliminating flows in occupied stream habitat during summer months, temporarily eliminating western pond turtle habitat.

Effects on Individuals. Adult western pond turtles may be injured or killed, and eggs or hatchlings may be buried or damaged by equipment used to complete Covered Activities, especially those that occur in aquatic habitat or adjacent to aquatic habitat. Dewatering activities that result in a temporary loss of habitat may also result in injury or death of individuals as they attempt to relocate to other suitable habitat.

Conservation Actions. In addition to the biological goals and objectives from Chapter 5 of the Plan listed in sections above for aquatic/wetland complex and riverine/riparian complex that will benefit western pond turtle, the following biological goal and objectives in the Plan and associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to western pond turtle and will result in several beneficial consequences to the turtle:

- Goal WPT-1, Habitat for a sustained population of western pond turtle within the Reserve System.
- Objective WPT-1.1, Protect and Enhance Western Pond Turtle Habitat.
- Objective WPT-1.2, Restore Western Pond Turtle Habitat.

Implementation of these goals and objectives will protect and restore western pond turtle aquatic and upland habitat. A total of 2,800 acres of aquatic habitat and 3,859 acres of upland habitat will be protected, and 1,850 acres of aquatic habitat and 1,930 acres of upland habitat will be restored. Within this protected habitat, enhancements for western pond turtle (i.e., installation of basking sites, in-channel enhancement, and non-native turtle control measures) will be implemented at appropriate locations (see Plan *CM2 WPT-1, Western Pond Turtle Habitat Enhancement*). In order to maintain habitat connectivity, the Conservation Strategy will establish

an interconnected Reserve System that includes upland and aquatic habitat for western pond turtle, and that will enable movement and dispersal of western pond turtles.

There are no species-specific conditions on Covered Activities to avoid and minimize injury and mortality to individuals; however, *Community Condition 2*, *Stream System Condition*, and *Regional Public Projects Conditions 1-3* will reduce effects to individual western pond turtles. Implementation of Low Impact Development Standards will protect water quality for western pond turtle in its aquatic habitat.

Conclusion. Western pond turtles may have been historically abundant in the action area; however, there are few current records. The action area includes only a small portion of the total range of western pond turtle. Covered Activities will result in loss of aquatic and upland habitat for western pond turtle and potentially in habitat fragmentation. Impacts to habitat will be offset by the preservation, restoration and enhancement of large, interconnected areas of upland and aquatic habitat intended to support a sustained population of western pond turtle within the Reserve System. Implementation of the Conservation Strategy will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.7 Foothill Yellow-legged Frog

Habitat Loss and Fragmentation. Covered Activities will result in the loss of foothill yellow-legged frog habitat, which is defined as riverine land cover in the Foothills of the action area. The proposed action will result in the loss of 155 acres of habitat, including three stream miles. The proposed action will also result in temporary effects to 39 acres of habitat. Habitat loss is primarily a result of development and infrastructure projects, but may result from maintenance projects that render the stream unsuitable for the frogs.

Reduction in Habitat Function. Habitat quality for foothill yellow-legged frog may be impacted by runoff and invasive species associated with new development and infrastructure. Runoff may include petroleum, fertilizers and pesticides, which degrade water quality. Invasive plant species may outcompete native vegetation and alter the community structure within and next to streams. Invasive animal species could compete with frogs for resources, or may prey on the frogs. The loss of vegetation and substrate, especially cobbles, also reduces habitat quality. The loss of vegetation may result in higher and more variable water temperatures due to the lack of shade.

Effects on Individuals. Injury or mortality of foothill yellow-legged frogs is unlikely to result from Covered Activities because foothill yellow-legged frogs are not currently known to occur in the action area. However, it is possible they are present in scattered areas of the Foothills, or could expand into the action area during the permit term. Should foothill yellow-legged frogs occur in the action area, Covered Activities in streams could crush eggs, tadpoles or adults, or expose them to unsuitable conditions. Individuals could be crushed by equipment, buried, or desiccate from dewatering for in-stream work. Covered Activities that occur next to streams could also injure or kill frogs that occasionally move out of the stream into uplands next to the water. Petroleum, fertilizers and pesticides from runoff may be absorbed through the frog's permeable skin, which can affect growth, development, and survival.

Conservation Actions. In addition to the biological goals and objectives from Chapter 5 of the Plan listed in sections above for riverine/riparian complex that will benefit foothill yellow-legged frog, the following biological goal and objectives in the Plan and associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to foothill yellow-legged frog and will result in several beneficial consequences to the frog:

- Goal FYLF-1, Habitat to facilitate the expansion of foothill yellow-legged frog into the Plan Area.
- Objective FYLF-1.1, Protect Foothill Yellow-Legged Frog Riverine Habitat.
- Objective FYLF-1.2, Protect Foothill Yellow-Legged Frog Riparian Habitat.
- Objective FYLF-1.3, Restore Riparian Habitat for Foothill Yellow-Legged Frog.

Implementation of these goals and objectives will protect and restore foothill yellow-legged frog habitat. Specifically, 83 acres of riverine/riparian habitat will be protected, another 83 acres will be restored, and six miles of streams will be protected in the Foothills that provide habitat for foothill yellow-legged frog.

There are no species-specific conditions on Covered Activities to avoid and minimize injury and mortality to individuals; however, *Community Condition 2, Stream System Condition, and Regional Public Projects Conditions 1-3* will reduce effects to individual frogs.

Conclusion. The action area is west of the foothill yellow-legged frog's current known range in Placer County, and there are no records of foothill yellow-legged frog within the action area. The implementation of the Conservation Strategy will benefit the foothill yellow-legged frog by protecting and restoring habitat, and protecting water quality for foothill yellow-legged frog to allow for their expansion into the action area. This will mitigate for effects to suitable habitat resulting from Covered Activities, and contribute to the conservation of the species in the action area.

2.12.8 California Red-Legged Frog

Habitat Loss and Fragmentation. Covered Activities will result in the loss of suitable California red-legged frog habitat in the action area. California red-legged frogs require aquatic habitat for most aspects of their life cycle, and upland habitat for dispersal to breeding locations. Aquatic habitat includes aquatic/wetland complex, riverine/riparian complex, and urban riparian in the Foothills portion of the action area. Upland habitat includes oak woodland, grassland, pasture and agriculture within 100 feet of modeled aquatic habitat. The proposed action will result in the loss of 672 acres of aquatic habitat and 8,551 acres of upland habitat for California red-legged frog. Covered Activities will result in temporary effects to 168 acres of aquatic habitat and 214 acres of upland habitats. Removal or degradation of upland habitat could fragment habitat and prevent individual California red-legged frogs from dispersing to other areas.

Reduction in Habitat Function. Indirect effects resulting from urban development and other Covered Activities could degrade aquatic habitat. Runoff into wetlands, ponds, and riverine habitats from urban and rural development and new or expanded roads may include petroleum,

fertilizers and pesticides, which degrade water quality and may injure or kill individuals. Invasive plant species may outcompete native vegetation and alter the community structure within or next to aquatic habitat. Invasive animal species could compete with frogs for resources, or may prey on the frogs. The loss of vegetation may result in higher and more variable water temperatures due to the lack of shade.

Effects on Individuals. Within the action area, California red-legged frogs are only known to occur at Big Gun Conservation Bank. Covered Activities are, therefore, unlikely to result in injury or mortality of the frogs. However, if the species is found in or expands into other parts of the action area during the permit term, some Covered Activities could affect individuals. California red-legged frogs may be injured or killed by Covered Activities that occur in occupied aquatic or upland habitat. Eggs and tadpoles are most vulnerable as they have limited mobility compared with adults and cannot survive in upland habitats. Eggs and tadpoles may be crushed by equipment, buried, or desiccate from dewatering for in-stream work. Frogs in upland habitat may be crushed by equipment, or buried in refugia. Increased vehicular traffic following road widening or creation of new driveways/access roads within dispersal habitat for California red-legged frog will increase the number of individuals that are killed or injured on roadways. Petroleum, fertilizers and pesticides from runoff may be absorbed through the frog's permeable skin, which can affect growth, development, and survival.

Conservation Actions. In addition to the biological goals and objectives from Chapter 5 of the Plan listed in sections above for natural communities that will benefit California red-legged frog, the following biological goal and objectives in the Plan and associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to California red-legged frog and will result in several beneficial consequences to the frog:

- Goal CRLF-1, Protected, occupied California red-legged frog habitat in the Plan Area.
- Objective CRLF-1.1, Protect Occupied California Red-Legged Frog Habitat.
- Goal CRLF-2, Protected and restored, suitable California red-legged frog habitat in the Plan Area.
- Objective CRLF-2.1, Protect Suitable California Red-Legged Frog Habitat.
- Objective CRLF-2.2, Restore Suitable California Red-Legged Frog Habitat.

Implementation of these goals and objectives will protect and restore California red-legged frog aquatic and upland habitat. Goal CRLF-1 will result in the protection of 2 acres of occupied habitat at Big Gun Conservation Bank. Additionally, 1,168 acres of aquatic habitat and 12,484 acres of upland habitat will be protected, and 1,241 acres of aquatic habitat and 160 acres of upland habitat will be restored.

There are no species-specific conditions on Covered Activities to avoid and minimize injury and mortality to California red-legged frog. However, implementation of *General Condition 1, Watershed Hydrology and Water Quality*, will minimize the effects of Covered Activities on

water quality in the action area. *Community Condition 2, Stream System Condition, and Regional Public Projects Conditions 1-3* will reduce effects to individual frogs

Conclusion. Within the action area, California red-legged frogs are only known to occur at the Big Gun Conservation Bank. Although the loss of habitat resulting from Covered Activities could reduce the potential for California red-legged frogs to expand into other parts of the action area, the implementation of the Conservation Strategy will benefit the California red-legged frog by protecting and restoring habitat, and protecting water quality. This will mitigate for effects to habitat resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.9 Valley Elderberry Longhorn Beetle

Habitat Loss and Fragmentation. Covered Activities will result in the loss of habitat for valley elderberry longhorn beetle. Within the action area, elderberry shrubs in riparian and valley oak woodlands provide habitat for the beetle. The Plan's model for valley elderberry longhorn beetle includes valley oak woodland and riverine/riparian natural communities up to 650 feet in elevation. Because the presence of elderberry plants could not be determined from the land-cover data, modeled habitat is likely an overestimate of available habitat. Out of a total of 6,367 acres of modeled habitat for valley elderberry longhorn beetle in the action area, 476 acres (approximately 8 percent) will be lost as a result of Covered Activities. An additional 18 acres of habitat will be temporarily affected by Covered Activities.

The loss of habitat could decrease the number of patches of habitat occupied by valley elderberry longhorn beetle in the action area, and reduce the ability of the beetles to disperse within the action area. Occupied elderberry shrubs tend to remain occupied, and removal of occupied shrubs may remove an entire or significant portion of a population. The loss of habitat could also limit the persistence of a population if there are too few remaining shrubs to support reproduction sufficient to sustain a population. Valley elderberry longhorn beetle are not known to disperse great distances, and the removal of habitat could create isolated populations if elderberry shrubs are spaced too far apart to allow for dispersal.

Reduction to Habitat Function. Covered Activities such as maintenance of culverts, road crossings and utilities, as well as in-stream projects that affect adjacent riparian habitat could impact elderberry shrubs without removing them (i.e., by trimming or compacting soil) and result in the degradation of habitat for valley elderberry longhorn beetle. Covered Activities could also result in indirect effects to shrubs and beetles from dust and vibrations, as well as fuel, lubricants, oils or other pollutants that affect shrubs or beetles. This could occur from activities adjacent to shrubs that result in damage such that the health and vigor of the elderberry shrub is compromised. Any beetles or larvae dependent on the impacted shrub may not have sufficient resources available to complete the life cycle. The loss of shrubs, therefore, would reduce the number of beetles, and the extent and connectivity of their occupied range.

In addition, the quality of habitat for valley elderberry longhorn beetle adjacent to new urban or rural development may be reduced by increased risk of wildfire and the spread of invasive plants and animals that could affect valley elderberry longhorn beetle. Invasive plants could affect valley elderberry longhorn beetle by out-competing host elderberry shrubs and reducing the

availability of suitable habitat for valley elderberry longhorn beetle. Invasive animals, such as the Argentine ant, could affect valley elderberry longhorn beetle through predation (Huxel 2000).

Effects on Individuals. The proposed action could result in injury and mortality of any valley elderberry longhorn beetle eggs, larvae, pupae, or adults on elderberry shrubs impacted by Covered Activities. Any life stage present on or in the elderberry shrub could be injured or killed if the shrub is removed or damaged by activities. Shrubs and beetles could be removed or crushed by construction-related equipment or suffer mortality from the accidental discharge of contaminants associated with equipment operation near shrubs.

Conservation Actions. In addition to the biological goals and objectives from Chapter 5 of the Plan listed in sections above for valley oak woodland and riverine/riparian natural communities that will benefit valley elderberry longhorn beetle, the following biological goal and objectives in the Plan and associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to valley elderberry longhorn beetle, and will result in several beneficial consequences to valley elderberry longhorn beetle:

- GOAL VELB-1, Habitat to support a sustained population of valley elderberry longhorn beetle within the Reserve System.
- Objective VELB-1.1, Restore Valley Elderberry Longhorn Beetle Habitat.

The proposed action would result in the protection of 2,313 acres and the restoration of 1,553 acres of modeled habitat for valley elderberry longhorn beetle in the action area. Elderberry shrubs would be planted in restored habitat and sited to reconnect isolated patches to increase connectivity between suitable patches of habitat for the beetle; areas adjacent to sites already occupied by valley elderberry longhorn beetle will be prioritized. Because beetles have poor dispersal capacity, it is essential to maintain riparian corridors with sufficient extent of elderberry shrubs so that populations of the beetle do not become isolated and vulnerable to stochastic events. Restoration of riparian habitat will include the planting of elderberry shrubs and associated riparian species sufficient to offset loss of valley elderberry longhorn beetle consistent with any current Service guidelines.

Effects to valley elderberry longhorn beetles resulting from Covered Activities will be minimized by *Species Condition 8, Valley Elderberry Longhorn Beetle*. In addition, measures in the Plan to avoid impacts to the Stream System will also minimize the impacts to habitat for valley elderberry longhorn beetle.

Conclusion. Valley elderberry longhorn beetle is known to occur in the action area within watersheds for which the Revised Recovery Plan for Valley Elderberry Longhorn Beetle (Service 2019c) sets recovery criteria for protection of habitat. While Covered Activities will result in loss of modeled habitat for valley elderberry longhorn beetle, the amount of habitat loss is likely overestimated because elderberry shrubs are too small to map individually and may not be present in all modeled habitat. Impacts to modeled habitat will be offset by the preservation, restoration and enhancement of habitat for valley elderberry longhorn beetle within the Reserve System; restored riparian habitat in the Reserve System will include appropriate habitat components for valley elderberry longhorn beetle. Sites adjacent to occupied valley elderberry

longhorn beetle will be prioritized for elderberry plantings and restoration will be sited to improve connectivity between habitat patches. This will contribute towards recovery plan criteria for protecting suitable habitat patches for valley elderberry longhorn beetle. Implementation of the Conservation Strategy will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.10 Vernal Pool Fairy Shrimp

Habitat Loss and Fragmentation. Covered Activities will result in the loss of habitat for vernal pool fairy shrimp; specifically 580 acres of vernal pool constituent habitat within 12,550 acres of vernal pool complex that will be lost as described in Section 2.9.1.2, *Vernal Pool Complex and Grassland* of this Biological Opinion. Vernal pool constituent habitat includes vernal pools, seasonal wetlands, and seasonal wetland swales (see Plan Section 3.4.3.2, *Constituent Habitats* for a description of how these habitats are differentiated). While vernal pools are the most suitable wetland type for vernal pool fairy shrimp, seasonal wetlands and seasonal wetland swales may also provide habitat and are important features in the landscape that facilitate the passive dispersal of individuals. Within the 580 acres of vernal pool constituent habitat that will be lost, no more than 185 acres may be vernal pools. Covered Activities will also result in temporary effects to 30 acres of vernal pool constituent habitat (no more than 15 acres of which may be vernal pools) within 455 acres of vernal pool complex that will be temporarily affected.

Because not all vernal pool constituent habitat is occupied by vernal pool fairy shrimp (see Section 2.9.11 for vernal pool fairy shrimp above), the loss of vernal pool complex and vernal pool constituent habitat would remove habitat occupied by vernal pool fairy shrimp as well as unoccupied habitat. The loss of occupied habitat will reduce the number of individuals and populations in the action area. The loss of occupied habitat could limit the genetic diversity and the ecological and geographic range of the species in the action area. The loss of vernal pool complex and vernal pool constituent habitat will also fragment remaining habitat. Habitat fragmentation and isolation could limit or prevent the dispersal of vernal pool fairy shrimp cysts within and between populations. In addition, populations of vernal pool fairy shrimp in small and/or isolated fragments may be more vulnerable to stochastic events and extirpation, and habitat fragments may be less likely to be repopulated.

Reduction to Habitat Function. Indirect effects to vernal pool complex and associated vernal pool constituent habitat described in Section 2.11.2, *Reduction of Habitat Function* of this Biological Opinion could result in changes to hydrology such that vernal pool fairy shrimp cannot complete their life cycle in habitat that is indirectly effected. Indirect effects will result from changes in land cover type, typically an increase in impervious surfaces, that affects the hydrology that supports vernal pool wetlands. Vernal pool wetlands usually fill from surface water flow across the surrounding uplands. Impervious surfaces may increase the amount of water, lower the water quality, or divert the water away from vernal pool wetlands. The inadvertent introduction of an invasive plant species by construction equipment, personnel, or contaminated seed or straw is another indirect impact that could reduce habitat quality for vernal pool fairy shrimp. Invasive plants can displace native vernal pool wetland plant species by outcompeting them for space, sun, and water. Invasive plant species can alter the hydrology of vernal pool wetlands to the extent that the hydroperiod is no longer sufficient to support the life cycle of vernal pool fairy shrimp.

Approximately 1,979 acres of vernal pool complex habitat is within the indirect effect radius of new urban and rural development. Covered Activities will result in indirect effects to 70 acres of vernal pool complex habitat for vernal pool fairy shrimp in the Valley Conservation and Rural Development Area, 506 acres along the border between the Valley Potential Future Growth Area and the Valley Conservation and Rural Development Area, and 183 acres in the Foothills that are currently subject to a low level of existing indirect effects. Based on an estimated average wetland density of 4.7 percent in vernal pool complex across all vernal pool constituent habitat density categories (see Plan section 4.7.11), within the 1,979 acres of vernal pool complex indirectly affected by new urban development approximately 93 acres of vernal pool constituent habitat could be indirectly affected. As described in Section 2.11.2, *Reduction in Habitat Function*, offsite indirect effects within the Potential Future Growth Area are not considered as these effects will ultimately be captured as effects associated with other Covered Activities. On-site indirect effects to vernal pool constituent habitats in avoided habitat (these are in addition to those indirect effects described above) will not exceed 66 acres; this includes 56 acres within the Valley Potential Future Growth Area and 10 acres within the Valley Conservation and Rural Development Area.

Effects on Individuals. The proposed action would result in injury or mortality to vernal pool fairy shrimp that occur in habitat where Covered Activities are implemented. Cysts could be buried or damaged by equipment that is operated in occupied vernal pool wetlands, or by the deposition of soil into or near the vernal pool constituent habitat during ground-disturbing activities, possibly preventing eggs from hatching the following wet season(s). Adults could be buried, injured or killed by equipment operated in inundated vernal pool wetlands, or if water quality is altered by sediment transport into occupied habitat during ground disturbing activities such that they die, have reduced survivorship, or reduced reproductive output. Dust and chemicals inadvertently released (e.g., fuel, lubricants, degreasers) during construction and subsequently deposited in vernal pool wetlands near or adjacent to Covered Activities could impact water quality and result in mortality, injury, or reduced reproductive success.

Conservation Actions. The biological goals and objectives from Chapter 5 of the Plan listed above in Section 2.11.1.2, *Vernal Pool Complex and Grassland* will reduce and offset effects to vernal pool fairy shrimp associated with habitat loss and fragmentation. The following biological objective in the Plan and its associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to vernal pool fairy shrimp and will result in several beneficial consequences to vernal pool fairy shrimp:

- Objective VPB-1.1, Maintain Vernal Pool Fairy Shrimp Occupancy in the Reserve System.

Implementation of the Conservation Strategy will protect 17,000 acres of vernal pool complex including 790 acres of vernal pool constituent habitat (of which at least 250 acres will be vernal pools) and will restore 3,000 acres of vernal pool complex including 900 acres of vernal pool constituent habitat of which a minimum of 34 percent (326 acres) will be delineated as vernal pools. To minimize the temporal loss of habitat, the Plan includes a stay ahead requirement (see Plan Section 8.4.3 for details), which will ensure habitat is protected, restored and created at a rate equal to impacts. The Plan also includes an Advanced Acquisition obligation (see Plan Section 5.3.1.5.2) that must be met prior to year two of Plan implementation or prior to Covered

Activities impacting more than 1,800 acres of vernal pool complex or 80 acres of vernal pool constituent habitat.

The preservation, restoration and enhancement of vernal pool complex will be concentrated in the Valley portion of the action area and in the Western Placer Core Recovery Area described in the Recovery Plan (Service 2005). Combined with existing protected vernal pool complexes in the Western Placer County Core Recovery Area (5,421 acres or 21 percent), implementation of the Plan will result in the protection of approximately 51 percent of vernal pool complexes in the Western Placer County Core Recovery Area. While this falls short of the 85 percent protection goal identified for this core area in the recovery plan, the recovery plan allows for flexibility to modify these goals on a case-by-case basis (Service 2005). By the end of the permit term, 27,068 acres of vernal pool complex will be protected and restored in the action area (within and outside of the core area), which is greater than the total core area acreage recommended for protection by the recovery plan for western Placer County (i.e., 85 percent of the suitable habitat in the core area, or approximately 26,420 acres).

The protection of vernal pool complex habitat will be guided by the Plan's reserve design criteria (see Plan Section 5.3.1.5.2, *Vernal Pool Complexes and Grassland Natural Communities*) to ensure the Reserve System will provide high quality habitat for vernal pool fairy shrimp. Implementation of *General Condition 2, Conservation Lands: Development Interface Design Requirements* will minimize the effects of urban development on vernal pool habitat within the Reserve System.

The Plan provides specific criteria for selecting restoration sites within the Reserve System to ensure that restoration is sited appropriately and likely to be successful (see Plan *CM VPCG-2, Reserve Design for Vernal Pool Restoration/Creation*). The Plan also requires extensive monitoring of vernal pool restoration sites and describes criteria for determining whether restoration of vernal pool habitat is successful (see Plan Section 7.4.3.1.2, *Monitor Success of Vernal Pool Complex Restoration/Creation Measures*). The response of vernal pool fairy shrimp to vernal pool restoration and creation will also be monitored (see Plan Section 7.5.11.3, *Evaluate Species' Response to Vernal Pool Restoration/Creation*).

Vernal pool habitat on reserve lands will be managed and enhanced to promote recruitment and occupancy of vernal pool fairy shrimp (see Plan Section 5.3.2, *Conservation Measure 2: Manage and Enhance the Reserve System*). The Plan requires that the Reserve System support an occupancy rate (the Occupancy Rate Standard) for vernal pool fairy shrimp that is equal to or greater than that of vernal pools that will be lost (Plan Section 5.3.1.6.10, *Vernal Pool Branchiopods*), and will prioritize protection of sites that are known to be occupied by vernal pool fairy shrimp. Monitoring will take place to make sure the Occupancy Rate Standard for vernal pool fairy shrimp is being met (see Plan Section 7.5.11.1.1, *Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp* and Plan Section 5.3.1.6.10, *Vernal Pool Branchiopods*). The Occupancy Rate Standard applies to all protected, restored, and created pools on the Reserve System, combined.

Conclusion. The Plan's Conservation Strategy will contribute to the goals for vernal pool fairy shrimp in the Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005) including: protecting diverse vernal pool habitats in large habitat blocks;

protecting unoccupied pools within vernal pool complexes, protecting appropriate upland buffers around and between vernal pool complexes; and managing habitat to maintain hydrologic functions and prevent domination by invasive species.

Implementation of the Plan's Conservation Strategy will support the following elements in the recovery plan identified specifically for habitat conservation plans:

- Permanently protected vernal pool preserves within the Plan Area in large contiguous blocks of suitable habitat.
- Protection of the entire genetic range of each listed species within the Plan Area.
- Connectivity with other preserves within the Plan Area.
- Adaptive management of the preserves within the Plan Area to support the species addressed in this recovery plan.
- Sufficient funding for management, maintenance, and monitoring of the preserves in perpetuity.

While Covered Activities will result in a substantial loss of habitat for vernal pool fairy shrimp, the loss of habitat will be offset by the preservation, management and enhancement of large interconnected areas of vernal pool complex and vernal pool constituent habitats that provide high quality habitat and that are occupied by vernal pool fairy shrimp. Implementation of the Conservation Strategy will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.11 Vernal Pool Tadpole Shrimp

Habitat Loss and Fragmentation. Covered Activities would result in the same amount of habitat loss and fragmentation as described above for vernal pool fairy shrimp. Vernal pool fairy shrimp and vernal pool tadpole shrimp can co-occur in vernal pool complex habitat and the Plan's habitat model for these two species overlaps completely. However, vernal pool tadpole shrimp are rare in the action area and most vernal pool constituent habitat is not occupied by vernal pool tadpole shrimp (see Section 2.9.12, above).

Because of the rarity of vernal pool tadpole shrimp in the action area, most of vernal pool complex and vernal pool constituent habitat that will be lost to Covered Activities will not be occupied by vernal pool tadpole shrimp. However, if occupied habitat is lost, it could significantly reduce the number of individuals and populations in the action area and could limit the genetic diversity and the ecological and geographic range of the species in the action area.

The loss of vernal pool complex and vernal pool constituent habitat will also fragment remaining habitat. Habitat fragmentation and isolation could limit or prevent the dispersal of vernal pool tadpole shrimp cysts within and between populations. In addition, populations of tadpole shrimp in small and/or isolated fragments may be more vulnerable to stochastic events and extirpation, and habitat fragments may be less likely to be repopulated.

Reduction to Habitat Function. Indirect effects to vernal pool complex and associated vernal pool constituent habitat described in Section 2.11.2, *Reduction of Habitat Function* of this Biological Opinion could result in changes to hydrology such that vernal pool tadpole shrimp cannot complete their life cycle in habitat that is indirectly effected. Indirect effects to vernal pool tadpole shrimp are the same as described above for vernal pool fairy shrimp

Effects on Individuals. Effects to individual vernal pool tadpole shrimp that are present within vernal pool constituent habitat in the Plan Area are the same as described above for vernal pool fairy shrimp.

Conservation Actions. The biological goals and objectives from chapter 5 of the Plan listed above in Section 2.11.1.2, *Vernal Pool Complex and Grassland* will reduce and offset effects to vernal pool tadpole shrimp associated with habitat loss and fragmentation. The following biological objective in the Plan and its associated conservation measures (see Plan Table 5-8) will further reduce and offset the effects to vernal pool tadpole shrimp and will result in several beneficial consequences to vernal pool tadpole shrimp:

- Objective VPB-1.2, Maintain Vernal Pool Tadpole Shrimp Occupancy in the Reserve System.

Because habitat models are the same for vernal pool fairy shrimp and vernal pool tadpole shrimp, the preservation, restoration/creation, and enhancement for vernal pool tadpole shrimp is the same as that described above for vernal pool fairy shrimp.

However, if surveys result in an Occupancy Rate Standard of less than 1 percent due to the rarity of the tadpole shrimp in the action area (see Plan Section 5.2.1.6.10), the Plan would instead require that one population of vernal pool tadpole shrimp be protected or restored either through the creation of an occupied vernal pool or through the purchase of a credit from a conservation bank in the action area.

Conclusion. Though the species is neither abundant nor widespread in the action area, the action area is part of the eastern edge of the tadpole shrimp's range and the action area is important to maintain the historical distribution of the species. The preservation, management and enhancement of large interconnected areas of vernal pool complex and vernal pool constituent habitats will maintain habitat for vernal pool tadpole shrimp in the action area. The conservation of occupied vernal pool tadpole shrimp habitat will ensure that the species persists in the action area. Implementation of the Conservation Strategy will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.12 Conservancy Fairy Shrimp

Habitat Loss and Fragmentation. There is no habitat model for conservancy fairy shrimp because the species is only known from one pool within the action area, which occurs on a mitigation bank. Therefore, the amount of habitat loss is not quantified and, unless additional occurrences are found, it is unlikely that Covered Activities will result in habitat loss for this species.

Reduction to Habitat Function. Because the only occurrence of conservancy fairy shrimp in the action area is located on a mitigation bank, no reduction to habitat function from Covered Activities is anticipated unless additional occurrences are found.

Effects on Individuals. Because the only occurrence of conservancy fairy shrimp in the action area is located on a mitigation bank, Covered Activities are not anticipated to have any effects on conservancy fairy shrimp individuals unless additional occurrences of conservancy fairy shrimp are found.

Conservation Actions. Due to the rarity of the species in the action area, surveys for conservancy fairy shrimp will be required in the two watersheds that surround the occurrence within the action area, and in any other watersheds in which the species is found in the future. Covered Activities may not take any Conservancy fairy shrimp until new occurrences are found and protected. For the first population lost, two other populations would be protected. For take of any other additional populations, three new populations would be protected.

Conclusion. The preservation, restoration, management and enhancement of large interconnected areas of vernal pool complex and vernal pool constituent habitats will maintain habitat for conservancy fairy shrimp in the action area. The conservation of new populations for each population removed would ensure that a metapopulation in the action area would be conserved, should it exist. Implementation of the Conservation Strategy will mitigate for effects resulting from Covered Activities and contribute to the conservation of the species in the action area.

2.12.13 Critical Habitat

2.12.13.1 Vernal Pool Fairy Shrimp Critical Habitat

Vernal pool fairy shrimp critical habitat units 12a and 12b are within the action area. Of the approximately 2,580 acres within these two critical habitat units, 1,800 acres is mapped as vernal pool complex and, therefore, likely to support the Primary Constituent Elements for vernal pool fairy shrimp.

Of the 1,800 acres of vernal pool complex within critical habitat, Covered Activities will directly or indirectly affect 851 acres of vernal pool complex habitat. Although it is not possible to distinguish the amount of direct versus indirect effects at this time, it is assumed that these areas will no longer provide the Primary Constituent Elements for vernal pool fairy shrimp critical habitat. Of the 851 acres of vernal pool complex that will be affected, 440 acres are mapped as having a low density (0-1 percent) of vernal pool constituent habitat.; 316 acres are mapped as having a medium density (1-5 percent) of vernal pool constituent habitat, and 95 acres is mapped as having high densities (>5 percent) of vernal pool constituent habitat.

Implementation of the Plan's Conservation Strategy will include preservation and restoration of vernal pool fairy shrimp habitat. Approximately 560 acres of vernal pool complex within designated critical habitat in the action area is located in the Reserve Acquisition Area, where habitat acquisition for the Reserve System will be focused. Approximately 390 acres of this is currently protected in existing preserves, some of which may be incorporated into the Reserve System in the future. The loss of vernal pool complex within critical habitat within the action area is not likely to result in significant habitat fragmentation because habitat loss would occur

within the Potential Future Growth Area while preservation would be concentrated in the Reserve Acquisition Area where the Plan's acquisition design strategy will aim to protect large blocks of habitat and will implement measures to buffer effects along the urban-reserve interface boundary.

Vernal pool complex within the Reserve System will be managed and enhanced to reduce non-native species, increase native species diversity, and enhance and maintain the natural hydrology of vernal pool complexes. This would maintain or improve the condition of vernal pool complex within any Reserve System lands within designated critical habitat such that it would provide the Primary Constituent Elements for vernal pool fairy shrimp critical habitat. In addition, restoration of vernal pool constituent habitat could occur on Reserve System lands if they include areas appropriate for restoration as described in the Plan (see Plan CN3 VO CG-1, *Vernal Pool Complex Restoration/Creation*). Restoration of vernal pool complex within critical habitat would result in new areas that support Primary Constituent Elements for vernal pool fairy shrimp critical habitat.

Conclusion. The loss of 851 acres of vernal pool complex within critical habitat in action area as a result of Covered Activities is small and discrete relative to the amount of critical habitat designated for the conservation of the vernal pool fairy shrimp. The amount of critical habitat to be lost that provides Primary Constituent Elements for vernal pool fairy shrimp is less than 0.1 percent of the designated critical habitat throughout the species' range. Implementation of the Conservation Strategy will maintain Primary Constituent Elements for vernal pool fairy shrimp critical habitat within Reserve System lands established in designated critical habitat for vernal pool fairy shrimp.

2.13 Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Biological Opinion. Future Federal actions that are unrelated to the proposed actions are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Many projects, in particular development within non-participating cities, are reasonably certain to occur in the action area, yet will require future Federal actions and separate consultations under the Act and are thus not considered in the cumulative effects analysis.

The following are non-federal activities that are reasonably certain to occur in the action area that are unrelated to the proposed actions and could contribute to cumulative effects in the action area.

Ongoing and routine agricultural activities are not covered under the Plan. Construction and maintenance of agricultural roads and irrigation systems, overgrazing, and rodent control could degrade habitat for Covered Species. Conversion of crop types that provide habitat for Covered Species to crop types that do not (i.e., orchards or vineyards) could also result in loss and degradation of habitat. Use of pesticides could affect Covered Species via toxicity and result in decreased prey availability.

Continued human population growth in the action area (as a result of both Covered Activities and development within non-participating cities) will likely result in increased use of roads and recreational facilities in the action area. Take from use of roads, recreational facilities and trails is not covered under the Plan. Vehicular traffic on rural roads, in particular, could result in effects to Covered Species such as burrowing owl or giant garter snake that are susceptible to vehicle strike. Improper use of recreational facilities could degrade habitat through increased disturbance and illegal activities such as trash dumping.

Although water supply activities for the city of Lincoln and the Placer County Water Agency are Covered Activities, the activities of the Nevada Irrigation District and South Sutter Irrigation District are not covered under the Plan. These activities could result in changes to streamflow, changes in water quality, and effects to habitat for Covered Species from maintenance activities (i.e., vegetation removal, canal lining).

Anthropogenic factors, such as use of pesticides and spread of invasive species and disease, are expected to continue throughout the permit term. Use of pesticides is not covered under the Plan. However, development within the action area could result in increased use of pesticides (i.e., for mosquito control or pest control within developed areas) and potentially result in effects to Covered Species in adjacent habitats. Increased human presence can result in the introduction of invasive species and diseases (*Phytophthora*, for example) that can adversely affect Covered Species and/or their habitat.

Conditions in the Plan will limit impacts from recreation within the Reserve System, limit use of pesticides and rodent control within the Reserve System, and implement measures to control invasive plant and animal species. Changed circumstances in Plan Section 10.3, *Changed and Unforeseen Circumstances* describes responsive actions that will be triggered at certain thresholds for climate change, invasive species, wildfire, drought and other environmental changes (see Plan Table 10-1). Although these measures in the Plan will only apply to Covered Activities and within the Reserve System, they will help limit cumulative effects in the action area. In addition, the Plan's protection of a large interconnected Reserve System across a variety of environmental gradients will increase the permeability of the landscape to allow movement of Covered Species in response to climate change or other stressors.

2.14 Conclusion

After reviewing the current status of the Swainson's hawk, California black rail, western burrowing owl, tricolored blackbird, giant garter snake, western pond turtle, foothill yellow-legged frog, California red-legged frog, valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, and conservancy fairy shrimp; the environmental baseline for the action area; the effects of the proposed actions, and the cumulative effects, it is the Service's Biological Opinion and Conference Opinion that the issuance of an incidental take permit pursuant to section 10(a)(1)(B) of the Act and implementation of the Placer County Conservation Program Clean Water Act 404 Permit Strategy is not likely to jeopardize the

continued existence of any of these species. The Service reached this conclusion because the proposed action's effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of these species based on the following reasons:

1. Implementation of the Conservation Strategy will mitigate for effects resulting from Covered Activities and contribute to the conservation of the Covered Species in the action area.
2. Natural community-level goals and objectives from Chapter 5 of the Plan will benefit Covered Species.
3. Biological goals and objectives in the Plan, and associated conservation measures, have been developed specifically for each Covered Species to ensure the Plan contributes to the conservation of these species in the action area.
4. Based on the mitigation proposed in the Plan's Conservation Strategy, the adverse effects to the Covered Species will be offset by the long-term preservation, adaptive management, and monitoring of the habitat within the Reserve System.
5. The Reserve Acquisition Area will aim to protect large blocks of habitat and will implement measures to buffer effects along the urban-reserve interface boundary.

After reviewing the current status of designated critical habitat for the vernal pool fairy shrimp, the environmental baseline for the action area, the effects of the proposed Covered Activities, and the cumulative effects, it is the Service's biological opinion that the issuance of an incidental take permit pursuant to section 10(a)(1)(B) of the Act and implementation of the Placer County Conservation Program Clean Water Act 404 Permit Strategy, as proposed, is not likely to destroy or adversely modify designated critical habitat. The Service reached this conclusion because the project-related effects to the designated critical habitat, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding the function of the vernal pool fairy shrimp critical habitat to serve its intended conservation role for the species based on the following:

1. The adverse effects related to loss of critical habitat and Primary Constituent Elements are small and discrete relative to the entire area designated as vernal pool fairy shrimp critical habitat.
2. Implementation of the Conservation Strategy will maintain Primary Constituent Elements for vernal pool fairy shrimp critical habitat within Reserve System lands thereby ensuring fully functional vernal pool landscapes remain in the proposed preserves.
3. Avoidance and minimization measures have been incorporated to reduce indirect effects to PCEs during implementation of Covered Activities.
4. Restoration of vernal pool complex within critical habitat would result in new areas that support Primary Constituent Elements.

3. INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as 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. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan and its associated documents clearly identify anticipated effects on Covered Species and the measures that will be taken to minimize those effects. The Plan's Conservation Strategy (Chapter 5), Conditions on Covered Activities (Chapter 6), and monitoring and adaptive management program (Chapter 7), together with Plan Chapter 8 (Plan Implementation) are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR §402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the Act to apply. If the Permittees fail to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse. The anticipated amount or extent of the incidental take and associated reporting requirements are described in the Plan and its accompanying section 10(a)(1)(B) permit.

The Corps' proposed Placer County Conservation Program Clean Water Act 404 Permit Strategy will authorize a subset of activities covered by the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan. Only activities that comply with the Habitat Conservation Plan/Natural Community Conservation Plan and are Covered Activities under the Plan may receive authorization under Placer County Conservation Program Clean Water Act 404 Permit Strategy. Therefore, based on the foregoing analyses and conclusions presented above, this Incidental Take Statement addresses incidental take resulting from the Corps' proposed action. The Plan's Conservation Strategy (Chapter 5), Conditions on Covered Activities (Chapter 6), and monitoring and adaptive management program (Chapter 7), together with Plan Chapter 8 (Plan Implementation), are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR §402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the Act to apply. If the Corps fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse.

3.1 Amount or Extent of Take

The Service anticipates incidental take of the following Covered Species, currently listed under the Act, as a result of Covered Activities under the Plan, including those needing authorization under the Corps' Permit Strategy during the 50-year permit term: vernal pool fairy shrimp, vernal pool tadpole shrimp, conservancy fairy shrimp, valley elderberry longhorn beetle, California red-legged frog, and giant garter snake. Incidental take in terms of numbers of individuals may be difficult to detect because of population dynamics, small body size, seasonal fluctuations in populations, and habitat type. However, take of these listed species can be anticipated by loss or degradation of habitat modeled under the Plan and the amount of take in the form of habitat loss can be used as a surrogate for number of individuals taken. In some cases, implementation of the avoidance measures from Chapter 6 of the Plan may prevent direct injury and mortality of individuals despite loss of habitat.

Similarly, the Service anticipates incidental take of the following Covered Species, currently not listed under the Act, during the 50-year permit term: foothill yellow-legged frog, western pond turtle, western burrowing owl, tricolored blackbird, Swainson's hawk, and California black rail. Incidental take in terms of numbers of individuals may be difficult to detect because of population dynamics, small body size, seasonal fluctuations in populations, and habitat type. However, take of these listed species can be anticipated by loss or degradation of habitat modeled under the Plan and the amount of take in the form of habitat loss can be used as a surrogate for number of individuals taken. In some cases, implementation of the avoidance measures from Chapter 6 of the Plan may prevent direct injury and mortality of individuals despite loss of habitat.

Table 3 establishes the maximum extent of take for each Covered Species (with the exception of conservancy fairy shrimp) in terms of habitat loss and sets a standard for determining when the authorized level of anticipated take has been exceeded. Conservancy fairy shrimp, for which the Plan does not model habitat, is discussed separately below. In some cases, the Plan quantifies reduction in habitat function for Covered Species, and these estimates set a standard for the maximum extent of take as a result of those effects. Specifically, the Plan estimates indirect effects to 70 acres of vernal pool complex habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp in the Valley Conservation and Rural Development Area, 506 acres along the border between the Valley Potential Future Growth Area and the Valley Conservation and Rural Development Area, and 183 acres in the Foothills that are currently subject to a low level of existing indirect effects. On-site indirect effects to vernal pool constituent habitats will not exceed 66 acres; this includes 56 acres within the Valley Potential Future Growth Area and 10 acres within the Valley Conservation and Rural Development Area.

Table 3. Maximum take allowed for Covered Species, using acres of habitat as a surrogate.

Species	Modeled Habitat Type (acres)	Maximum Permanent Effects (acres)	Maximum Temporary Effects (acres)
Swainson's Hawk	Nesting	149	10
	Foraging	16,267	602
	Total	16,416	612
California Black Rail	Year-round	105	41
Western Burrowing Owl	Year-round	16,444	609
Tricolored Blackbird	Nesting	55	103
	Foraging	17,015	836
	Total	17,070	939
Giant Garter Snake	Aquatic	1,438	203
	Upland	483	22
	Rice	2,060	90
	Total	3,981	315
Western Pond Turtle	Aquatic	750	250
	Upland	1,407	40
	Total	2,157	290
Foothill Yellow-legged Frog	Year-round	155	39
California Red-legged Frog	Aquatic	672	168
	Upland	8,551	214
	Total	9,223	382
Valley Elderberry Longhorn Beetle	Year-round	476	18
Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp	Vernal Pool Complex	12,550	455
	Vernal Pool Constituent Habitat	580 (and no more than 185 of vernal pools)	30

The Plan does not model habitat for conservancy fairy shrimp because they are only known to occur in one pool within the Permit Area. The occurrence is a single pool located in a conservation bank and no loss of habitat for this species is anticipated. However, in the unlikely event additional occurrences of conservancy fairy shrimp are found in the Permit Area, Covered Activities would have the potential to result in take of the species. The Plan addresses this possibility by applying conditions requiring species-specific surveys and specific protections described in Plan Section 6.3.5.14, *Species Condition 9, Conservancy Fairy Shrimp*, and by establishing a specific conservation objective in Chapter 5, Objective VPB-2.1, *Protect Conservancy Fairy Shrimp Occurrences*, which states that two previously unknown (at the time of Plan development) and unprotected conservancy fairy shrimp occurrences must be protected for the first occurrence of conservancy fairy shrimp taken, prior to such take occurring; and three additional occurrences must be protected for each additional occurrence taken, prior to such take occurring. These measures will ensure that more conservancy fairy shrimp occurrences within the Permit Area are protected than would be impacted by Covered Activities. Therefore, so long

as the requirements of Plan Condition 9, and Objective VPB-2.1 are met, there is not a specific acreage limit on the extent of take of habitat or individuals for conservancy fairy shrimp. However, the likelihood of take of any conservancy fairy shrimp is considered very low.

For the purposes of determining compliance with these requirements, an occurrence will be considered a vernal pool occupied by conservancy fairy shrimp. An occupied pool will be defined as described in Plan Section 5.3.1.6.10, *Vernal Pool Branchiopods* and Plan Section 6.3.5.15, Species Condition 10, *Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp*. Specifically, an occurrence will be considered a vernal pool (as determined by wetland delineation; see Plan Section 6.2.4.4, *Item 4: Mapping HCP/NCCP Aquatic Features* for details) that is occupied by conservancy fairy shrimp. If a conservancy fairy shrimp is found within a pool, the entire vernal pool will be considered occupied.

Upon implementation of the reasonable and prudent measures below, incidental take, as identified in this Biological Opinion, of the Covered Species associated with the implementation of the Western Placer Habitat Conservation Plan/Natural Community Conservation Plan will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

3.2 Effect of the Take

In the accompanying Biological Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to any of the Covered Species, or destruction or adverse modification of critical habitat.

3.3 Reasonable and Prudent Measures

The Service believes that implementation of the entire Western Placer Habitat Conservation Plan/Natural Community Conservation Plan constitutes reasonable and prudent measures necessary and appropriate to minimize take of all the Covered Species. The following chapters of the Plan will specifically minimize the take of Covered Species:

- Conservation Strategy (Chapter 5)
- Program Participation and Conditions on Covered Activities (Chapter 6)
- Monitoring and Adaptive Management (Chapter 7)
- Plan Implementation (Chapter 8)

3.4 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the following terms and conditions must be followed, which implement the reasonable and prudent measures, described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

The Permittees will notify the Service within one (1) working day of finding any injured or dead listed species or within one (1) working day of any unanticipated damage to habitat. Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag

containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the Manager of the Conservation Planning Division, at the Sacramento Fish and Wildlife Office at (916) 414-6600.

The Permittees shall conduct monitoring and adaptive management as described in Chapter 7 of the Plan and submit an annual report to the Service in accordance with Chapter 8 of the Plan. Annual reports will require synthesis of data and reporting on important trends such as land acquisition, fee collection, and habitat restoration. The report shall be submitted to the Manager of the Conservation Planning Division, at the Sacramento Fish and Wildlife Office, Endangered Species Division, 2800 Cottage Way, Room W-2605, Sacramento, 95825-1846.

The Corps will allow use of the Placer County Conservation Program Clean Water Act 404 Permit Strategy only for activities that fully comply with the Western Placer Habitat Conservation Plan/Natural Community Conservation Plan.

4. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service has no conservation recommendations for the proposed action considered in this Biological Opinion.

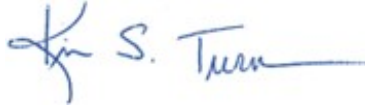
5. REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan. As provided in 50 CFR §402.16(a), reinitiation of formal consultation is required and shall be requested by the federal agency or by the Service where discretionary federal involvement or control over the action has been retained or is authorized by law and:

- 1) If the amount or extent of taking specified in the incidental take statement is exceeded;
- 2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- 3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or written concurrence, or
- 4) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this Biological Opinion and Conference Opinion for the proposed Western Placer County Habitat Conservation Plan/Natural Communities Conservation Plan, please contact Stephanie Jentsch, Senior Biologist (stephanie_jentsch@fws.gov) or Eric Tattersall, Assistant Field Supervisor (eric_tattersall@fws.gov), at the letterhead address or at (916) 414-6496.

Sincerely,

A handwritten signature in blue ink that reads "Kim S. Turner". The signature is written in a cursive style with a long horizontal flourish at the end.

Kim S. Turner
Acting Field Supervisor

Enclosures

LITERATURE CITED

- Aigner, P.A., J. Tecklin, and C.E. Koehler. 1995. Probable breeding population of the black rail in Yuba County, California. *Western Birds* 26:157-160.
- Atkinson, A. J., P. C. Trenham, R. N. Fisher, S. A. Hathaway, B. S. Johnson, S. G. Torres, and Y. C. Moore. 2004. *Designing Monitoring Programs in an Adaptive Management Context for Multiple Species Conservation Plans*. (U.S. Geological Survey Technical Report.) Sacramento, CA: U.S. Geological Survey Western Ecological Research Center.
- Barry, S.J., and G.M. Fellers. 2013. History and status of the California red-legged frog (*Rana draytonii*) in the Sierra Nevada, California, USA. *Herpetological Conservation and Biology* 8:456-502.
- Beedy, E.C., and A. Hayworth. 1992. Tricolored blackbird nesting failures in the Central Valley of California: general trends or isolated phenomena? Pages 33–46 in D. F. Williams, S. Byrne, and T. A. Rado (eds.), *Endangered and sensitive species of the San Joaquin Valley, California*. Sacramento, CA. California Energy Commission.
- Bechard, M.J., C.S. Houston, J.H. Sarasola, and A.S. England. 2020. Swainson's hawk (*Buteo swainsoni*), version 1.0, in A.F. Poole, editor, *The Birds of the World Online*. Cornell Laboratory of Ornithology, Ithica, New York. Accessed online, June 3, 2020 at: <https://doi.org/10.2173/bow.swahaw.01>
- Bloom, P. H. 1980. The status of the Swainson's hawk in California, 1979. U.S. Bureau of Land Management, Sacramento, California. Project. W-54-R-12, Job II-8, Final Report. 42 pages.
- Bossard, C.C., J.M. Randall, and M.C. Hoshovsky. 2000. *Invasive Plants in California's Wildlands*. University of California Press, Berkeley, California. 329 pages.
- Bourque, R. 2008. Spatial ecology of an inland population of the foothill yellow-legged frog (*Rana boylei*) in Tehama County, California. Thesis, Humboldt State University. Arcata, California.
- Brussard, P., F. Davis, J. Medeiros, B. Pavlik, and D. Sada. 2004. Report of the science advisors for the Placer County natural communities conservation plan and habitat conservation plan: planning principles, uncertainties, and management recommendations. County of Placer.
- Bulger, J.B., N.J. Scott Jr., and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. *Biological Conservation* 110:85-95.
- Bury, R.B. 1970. *Clemmys marmorata*. *Catalogue of American Amphibians and Reptiles*. 100.1-100.3.

- Bury, R.B. 1986. Feeding Ecology of the Turtle, *Clemmys marmorata*. Journal of Herpetology 20:515-521.
- Catlin, D.H. 2004. Factors affecting within-season and between-season breeding dispersal of burrowing owls in California. Thesis, Oregon State University. Corvallis, Oregon.
- Catlin, D.H., D.K. Rosenberg, and K.L. Haley. 2005. The effects of nesting success and mate fidelity on breeding dispersal in burrowing owls. Canadian Journal of Zoology 83:1574-1580.
- California Department of Fish and Wildlife. 2008. Burrowing owl (*Athene cunicularia*), Range Map, Revised by the California Wildlife Habitat Relationships Program, E. Burkett. Accessed online January 2, 2020 at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1872&inline=1>
- California Department of Fish and Wildlife. 2016. Status review: Swainson's hawk (*Buteo swainsoni*) in California. Nongame Wildlife Program, California Department of Fish and Wildlife, Sacramento, California. 29 pages.
- California Natural Diversity Data Base. 2019. RAREFIND 5. California Natural Diversity Data Base, California Department of Fish and Wildlife, Natural Heritage Division, Sacramento, California. Accessed online, November 25, 2019 at: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>
- Davidson, C., H.B. Shaffer, and M.R. Jennings. 2002. Spatial test of pesticide drift, habitat destruction, UV-B, and climate-change hypotheses for drift, California amphibian declines. Conservation Biology. 16:1588-1601.
- Davidson, E.W., M. Parris, J.P. Collins, J.E. Longcore, A.P. Pessier, J. Brunner. 2003. Pathogenicity and transmission of chytridiomycosis in tiger salamanders (*Ambystoma tigrinum*). Copeia. 2003:601-607.
- Dechant, J.A., M.F. Dinkins, D.H. Johnson, L.D. Igl, and C.M. Goldade. 2001. Effects of management practices on grassland birds: Swainson's hawk. USGS Northern Prairie Wildlife Research Center. Paper 119.
- DeSante, D.F., E.D. Ruhlen, and R. Scalf. 2007. The distribution and relative abundance of burrowing owls in California during 1991-1993: evidence for a declining population and thoughts on its conservation. Pages 1-41 in Barclay, J.H., K.W. Hunting, J.L. Lincer, J. Linthicum, and T.A. Roberts, editors. Proceedings of the California Burrowing Owl Symposium, November 2003. Bird Populations Monographs No. 1. The Institute for Bird Populations and Albion Environmental, Incorporated. Point Reyes Station, California. 197 pages.
- Dooling, R.J., and A.N. Popper. 2007. The effects of highway noise on birds. Prepared for the California Department of Transportation, Division of Environmental Analysis. Sacramento, California. 74 pages.

- Eddleman, W.R., R.E. Flores, and M. Legare. 1994. Black rail (*Laterallus jamaicensis*), version 2.0, in A.F. Poole, editor, The Birds of North America Online. Cornell Laboratory of Ornithology, Ithaca, New York. Accessed online, December 3, 2019, at: <https://doi.org/10.2173/bna.123>
- England, A.S., J.A. Estep, and W.R. Holt. 1995. Nest-site selection and reproductive performance of urban-nesting Swainson's hawks in the Central Valley of California. *Journal of Raptor Research* 29:179-186.
- Ernst, C.H., R.W. Barbour, and J.E. Lovich. 2009. *Turtles of the United States and Canada*. John Hopkins Press, Baltimore, Maryland. 840 pages.
- Estep, J.A. 1989. Biology, movements and habitat relationships of the Swainson's hawk in the Central Valley of California, 1986-87. Report for the California Department of Fish and Game, Nongame Bird and Mammal Section, Sacramento, California.
- Evens, J.G., G.W. Page, S.A. Laymon, and R.W. Stallcup. 1991. Distribution, relative abundance and status of the California black rail in western North America. *Condor*. 93:952-966.
- Fellers, G.M. 2005. *Rana draytonii*, Baird and Girard, 1852b California Red-Legged Frog. Pages 552-554 in M. Lannoo (Ed.). *Amphibian declines and the conservation status of United States species*. University of California Press. Berkeley, CA.
- Fisher, R.N. and H.B. Schaffer. 1996. The decline of amphibians in California's Great Central Valley. *Conservation Biology* 10:1387-1397.
- Fitch, H. 1936. Amphibians and reptiles of the Rogue River Basin, Oregon. *American Midland Naturalist* 17:634-652.
- Flores, R.E., and W.R. Eddleman. 1993. Nesting biology of California black rail in southwestern Arizona. *Western Birds* 24:81-88.
- Francis, C.D., and J.R. Barber. 2013. A framework or understanding noise impacts on wildlife: an urgent conservation priority. *Frontiers in Ecology and the Environment* 11:305-311.
- Franklin, A.B., B.R. Noon, and T.L. George. 2002. What is habitat fragmentation? *Studies in Avian Biology*. 25:20-29.
- Germano, D.J., and R.B. Bury. 2001. Western pond turtles (*Clemmys marmorata*) in the Central Valley of California: status and population structure. *Transactions of the Western Section of the Wildlife Society* 37:22-36.
- Germano, D.J., and G.B. Rathbun. 2008. Growth, population structure, and reproduction of western pond turtles (*Actinemys marmorata*) on the central coast of California. *Chelonian Conservation and Biology* 7:188-194.
- Gervais, J.A., D.K. Rosenburg, D.M. Fry, L. Trulio, and K.K. Strum. 2000. Burrowing owls and agricultural pesticides: evaluation of residues and risks for three populations in California, USA. *Environmental Toxicology and Chemistry* 19:337-343.

- Gervais, J.A., and R.G. Anthony. 2003. Chronic organochlorine contaminants, environmental variability, and demographics of a burrowing owl population. *Ecological Applications* 13:1250-1262.
- Gervais, J.A., C.M. Hunter, and R.G. Anthony. 2006. Interactive effects of prey and p,p'-DDE on burrowing owl populations dynamics. *Ecological Applications* 16:666-677.
- Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. Burrowing owl (*Athene cunicularia*). Pages 218–226 in Shuford, W.D. and T. Gardali, editors. *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California and California Department of Fish and Wildlife, Sacramento, California.
- Girard, P., J.Y. Takekawa, and S.R. Beissinger. 2010. Uncloaking a cryptic, threatened rail with molecular markers: origins, connectivity and demography of a recently-discovered population. *Conservation Genetics*. <http://dx.doi.org/10.1007/s10592-010-0126-4>
- Goldstein, M.I., B. Woodbridge, M.A. Zaccagnini, S.B. Canavelli and A. Lanusse. 1996. An assessment of mortality of Swainson's Hawks on wintering grounds in Argentina. *Journal of Raptor Research* 30:106-107.
- Green, G.A., R.A. Fitzner, R.G. Anthony, and L.E. Rogers. 1993. Comparative diets of burrowing owls in Oregon and Washington. *Northwest Science* 67:88-93.
- Hall, L.A., and S.R. Beissinger. 2017. Inferring the timing of long-distance dispersal between rail metapopulations using genetic and isotopic assignments. *Ecological Applications* 27:208-218.
- Hall, L.A., N.D. Van Schmidt, and S.R. Beissinger. 2018. Validating dispersal distances inferred from autoregressive occupancy models with genetic parentage assignments. *Journal of Animal Ecology* 87:691-702.
- Haug, E.A., and L.W. Oliphant. 1990. Movements, activity patterns, and habitat use of burrowing owls in Saskatchewan. *Journal of Wildlife Management* 54:27-35.
- Hayes, D.W., K.R. McAllister, S.A. Richardson, and D.W. Stinson. 1999. Washington state recovery plan for the western pond turtle. Washington Department of Fish and Wildlife. Olympia, Washington. x + 66 pages.
- Hayes, M.P., and M.M. Miyamoto. 1984. Biochemical, behavioral and body size differences between *Rana aurora aurora* and *R. a. draytonii*. *Copeia* 4:1018-1022.
- Hayes, M.P., and M.R. Jennings. 1986. Decline of ranid frog species in western North America: are bullfrogs (*Rana catesbeiana*) responsible? *Journal of Herpetology* 20:490-509.
- Hayes, M.P., and M.R. Jennings. 1988. Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylei*): implications for management. Pages 144-158, in R.E. Szaro, K.E. Severson, and D.R.

- Patton (technical coordinators): Proceedings of the symposium on management of amphibians, reptiles and small mammals in North America. USDA General Technical Report RM 166:1-458.
- Holyoak, M., and M. Koch-Munz. 2008. The effects of site condition and mitigation practices on the success of establishing valley elderberry longhorn beetle and its host plant, blue elderberry. *Environmental Management* 42:444-457.
- Holland, D.C. 1991. A synopsis of the ecology and status of the western pond turtle (*Clemmys marmorata*) in 1991. Report prepared for the U. S. Fish and Wildlife Service, National Ecology Research Center. 139 pages.
- Holland, D.C. 1994. The western pond turtle: habitat and history. Prepared for U.S. Department of Energy Bonneville Power Administration. Portland, Oregon: Wildlife Diversity Program, Oregon Department of Fish and Wildlife. 11 chapters + appendices.
- Holland, R.F. 2009. California's Great Valley vernal pool habitat status and loss: rephotorevised 2005. Report prepared for Placer Land Trust. i + 19 pages.
- Hosea, R.C. 1986. A population census of the Tricolored Blackbird, *Agelaius tricolor* (Audubon), in four counties in the northern Central Valley of California. Master's thesis, California State University, Sacramento.
- Huxel, G.R. 2000. The effect of the Argentine ant on the threatened valley elderberry longhorn beetle. *Biological Invasions* 2:81-85.
- ICF International. 2014. Critical habitat analysis, Placer County Conservation Plan. June. Draft. (ICF 00506.10). Sacramento, CA. Prepared for Placer County, CA. 9 pages.
- Jennings, M.R. 1988. Natural history and decline of native ranids in California. Pages 61-72 in H.F. Lisle, P.R. Brown, and B.M. McGurty, eds, *Proceedings of the Conference on California Herpetology*.
- Jennings, M.R., and M.P. Hayes. 1985. Pre-1900 overharvest of California red-legged frogs (*Rana aurora draytonii*): the inducement for bullfrog (*Rana catesbeiana*) introduction. *Herpetological Review* 31:94-103.
- Jennings, M.R., and M.P. Hayes. 1990. Final report of the status of the California red-legged frog (*Rana aurora draytonii*) in the Pescadero Marsh Natural Preserve. Prepared for the California Department of Parks and Recreation, Sacramento, California (Agreement 4-823-9018). Department of Herpetology, California Academy of Sciences, Golden Gate Park, San Francisco, CA. 30 pages.
- Jennings, M. R., M.P. Hayes, and D.C. Holland. 1992. A petition to the U.S. Fish and Wildlife Service to place the California red-legged frog (*Rana aurora draytonii*) and the western pond turtle (*Clemmys marmorata*) on the list of endangered and threatened wildlife and plants. 21 pages.

- Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final Report. Contract 8023. Prepared for California Department of Fish and Game, Rancho Cordova, California.
- Kupferberg, S.J. 1996. Hydrologic and geomorphic factors affecting conservation of a river-breeding frog (*Rana boylei*). *Ecological Applications* 6:1332-1344.
- Kupferberg, S.J. 1997. Bullfrog (*Rana Catesbeiana*) invasion of a California river: the role of larval competition. *Ecology* 78:1736-1751.
- Kupferberg, S.J., A.J. Lind, and W.J. Palen. 2009. Pulsed flow effects on the foothill yellow-legged frog (*Rana boylei*): population modeling. Final Report. California Energy Commission, PIER. Project No. PFP-03.
- Lenth, B.A., R.L. Knight, and W.C. Gilbert. 2006. Conservation value of clustered developments. *Conservation Biology* 20:1445-1456.
- Lind, A.J., H.H. Welsh, Jr., and R.A. Wilson. 1996. The effects of a dam on breeding habitat and egg survival of the foothill yellow-legged frog (*Rana boylei*) in northwestern California. *Herpetological Review* 27:62-67.
- Lind, A.J. 2005. Reintroduction of a declining amphibian: determining and ecologically feasible approach for the foothill yellow-legged frog (*Rana boylei*) through analysis of decline factors, genetic structure, and habitat associations. Ph.D. Dissertation. University of California, Davis.
- Lips, K.R., F. Brem, R. Brenes, J.D. Reeve, R.A. Alford, J. Voyles, C. Carey, L. Livo, A.P. Pessier, and J.P. Collins. 2006. Emerging Infectious Disease and the Loss of Biodiversity in a Neotropical Amphibian Community. *Proceedings of the National Academy of Sciences* 103:3165-3170.
- Longcore, T., and C. Rich. 2004. Ecological light pollution. *Frontiers in Ecology and the Environment* 2:191-198.
- Meese, R.J. 2014. Results of the 2014 tricolored blackbird statewide survey. California Department of Fish and Wildlife, Wildlife Branch, Nongame Wildlife Report 2014. Sacramento, California. 17 pages.
- Morey, S. 2000. Foothill yellow-legged frog: California wildlife habitat relationships system. California Department of Fish and Game, California Interagency Wildlife Task Group. Retrieved January 3, 2020 at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1500>
- [NBHCP] Natomas Basin Habitat Conservation Plan. 2003. Natomas Basin Habitat Conservation Plan, City of Sacramento, Sutter County, Natomas Basin Conservancy, Reclamation District No. 1000, and Natomas Mutual Water Company. Prepared for the U. S. Fish and Wildlife Service and California Department of Fish and Game, Sacramento, California. April, 2003.

- Nussbaum, R.A., E.D. Brodie, Jr., and R.M. Storm. 1983. Amphibians and Reptiles of the Pacific Northwest. University Press of Idaho. 332 pages.
- Placer County. 2020. Western Placer County Aquatic Resources Program. Prepared by Placer County Community Development Resources Agency, Auburn, California. February 2020.
- Placer County, City of Lincoln, South Placer Regional Transportation Authority, and Placer County Water Agency. 2020. Placer County Conservation Program, Western Placer County Habitat Conservation Plan/Natural Communities Conservation Plan. Prepared by ICF International. 952 pages + appendices.
- Plumpton, D.L., and R.S. Lutz. 1993. Prey selection and food habits of burrowing owls in Colorado. *Great Basin Naturalist* 53:299-304.
- Poulin, R.G., L.D. Todd, E.A. Haug, B.A. Millsap, and M.S. Martell. 2020. Burrowing owl (*Athene cunicularia*), version 1.0, in A.F. Poole, editor, *The Birds of the World Online*. Cornell Laboratory of Ornithology, Ithaca, New York. Accessed online, June 3, 2019, at: <https://doi.org/10.2173/bow.buowl.01>
- Rathbun, G. B., Siepel, N., and D. Holland. 1992. Nesting behavior and movements of western pond turtles, *Clemmys marmorata*. *Southwestern Naturalist* 37:319-324.
- Richmond, O.M.W., J. Tecklin, and S.R. Beissinger. 2008. Distribution of California black rails in the Sierra Nevada foothills. *Journal of Field Ornithology* 79:381-390.
- Richmond, O.M.W., S.K. Chen, B.B. Risk, J. Tecklin, and S.R. Beissinger. 2010. California black rails depend on irrigation-fed wetlands in the Sierra Nevada foothills. *California Agriculture* 64:85-93.
- Richmond, O.M.W., J. Tecklin, and S.R. Beissinger. 2012. Impact of cattle grazing on the occupancy of a cryptic, threatened rail. *Ecological Applications* 22:1655-1664.
- Risk, B.B., P. de Valpine, and S.R. Beissinger. 2011. A robust-design formulation of the incidence function model of metapopulation dynamics applied to two species of rails. *Ecology* 92:462-474.
- Ronan, N.A. 2002. Habitat selection, reproductive success, and site fidelity of burrowing owls in a grassland ecosystem. Thesis, Oregon State University. Corvallis, Oregon. 67 pages.
- Rosenberg, D.K., and K.L. Haley. 2004. The ecology of burrowing owls in the in the agroecosystem of the Imperial Valley, California. *Studies in Avian Biology* 27:120-135.
- Rosenberg, D.K., J. Gervais, H. Ober, and D. DeSante. 1998. An adaptive management plan for the burrowing owl population at Naval Air Station Lemoore, Lemoore, California. Accessed online January 2, 2020 at: https://www.birdpop.org/docs/pubs/Rosenberg_et_al_1998_An_Adaptive_Management_Plan_for_BUOW_at_Lemoore.pdf

- Sauer, J.R., D.K. Niven, J.E. Hines, D.J. Ziolkowski, Jr, K.L. Pardieck, J.E. Fallon, and W.A. Link. 2017. The North American Breeding Bird Survey, Results and Analysis 1966 - 2015. Version 2.07.2017 U.S. Geological Survey Patuxent Wildlife Research Center, Laurel, Maryland. Accessed online January 2, 2020, at: <https://www.mbr-pwrc.usgs.gov/bbs/bbs.html>
- Schlorff, R., and P. Bloom. 1984. The importance of riparian systems to nesting Swainson's hawks in the Central Valley of California, pages 612-618 in R.E. Warner and K.M. Hendrix, editors, California Riparian Systems. University of California Press, Berkeley, California. Accessed online, January 2, 2019 at: <https://publishing.cdlib.org/ucpressebooks/view?docId=ft1c6003wp&chunk.id=d0e69739&toc.depth=1&toc.id=d0e69739&brand=ucpress>
- Shaffer, H.B., G.M. Fellers, S.R. Voss, J.C. Oliver, and G.B. Pauly. 2004. Species boundaries, phylogeography and conservation genetics of the red-legged frog (*Rana aurora/draytonii*) complex. *Molecular Ecology* 13:2667-2677.
- Stebbins, R.C. 2003. Western reptiles and amphibians, third edition. Houghton Mifflin Harcourt Company, Boston, Massachusetts. 560 pages.
- Storer, T. 1925. A Synopsis of the Amphibia of California. *Zoology* 27:1-342.
- Thompson, C.D., and S.H. Anderson. 1988. Foraging behavior and food habits of burrowing owls in Wyoming. *Prairie Naturalist* 20:23-28.
- Thomsen, L. 1971. Behavior and ecology of Burrowing Owls on the Oakland Municipal Airport. *Condor* 73:177-192.
- Todd, L.D., and J. Skilnick. 2002. Large clutch size of a burrowing owl, *Athene cunicularia*, found in Saskatchewan. *Canadian Field Naturalist* 116:307-308.
- Trulio, L.A. and D.A. Chromczak. 2007. Burrowing owl nesting success at urban and parkland sites in northern California. Pages 115–122 in Barclay, J.H., K.W. Hunting, J.L. Lincer, J. Linthicum, and T.A. Roberts editors. Proceedings of the California Burrowing Owl Symposium, November 2003. Bird Populations Monographs No. 1. The Institute for Bird Populations and Albion Environmental, Incorporated. Point Reyes Station, California. 197 pages.
- Twedt, B. 1993. A comparative ecology of *Rana aurora* and *Rana catesbeiana* at Freshwater Lagoon, Humboldt County, California. Thesis, Humboldt State University, Arcata, CA. 53 pages + appendix.
- U.S. Army Corps of Engineers. 2008. Compensatory mitigation for losses of aquatic resources; final rule. 40 CFR Part 230. *Federal Register* 73:19594–19705.
- [Service] U.S. Fish and Wildlife Service. 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Final rule. *Federal Register* 45:52803-52807.

- Service. 1993. Endangered and threatened wildlife and plants; determination of threatened status for the giant garter snake. Final rule. Federal Register 58:54053-54066.
- Service. 1994. Endangered and threatened wildlife and plants; determination of endangered status for the conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp; and threatened status for the vernal pool fairy shrimp. Final rule. Federal Register 59:48136-48153.
- Service. 1996. Endangered and threatened wildlife and plants; determination of threatened status for the California red-legged frog. Final rule. Federal Register 61:25813-25833.
- Service. 1999. Draft recovery plan for the giant garter snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, Oregon. ix + 192 pages.
- Service. 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). Region 1, U.S. Fish and Wildlife Service. Portland, Oregon. 180 pages.
- Service. 2005. Recovery plan for vernal pool ecosystems of California and Southern Oregon. Portland, Oregon. xxvi + 606 pages.
- Service. 2006a. Endangered and threatened wildlife and plants; designation of critical habitat for the California red-legged frog, and special rule exemption associated with final listing for existing routine ranching activities. Final rule. Federal Register 71:19244-19346.
- Service. 2006b. Endangered and threatened wildlife and plants: designation of critical habitat for four vernal pool crustaceans and eleven vernal pool plants. Final rule. Federal Register 71:7118-7316.
- Service. 2007a. Vernal pool fairy shrimp (*Branchinecta lynchi*) 5-year review: summary and evaluation. Sacramento Fish and Wildlife Office, Sacramento, California. September 2007. 76 pages.
- Service. 2007b. Vernal pool tadpole shrimp (*Lepidurus packardii*) 5-year review: summary and evaluation. Sacramento Fish and Wildlife Office, Sacramento, California. September 2007. 50 pages.
- Service. 2010. Endangered and threatened wildlife and plants: revised designation of critical habitat for California red-legged frog. Final rule. Federal Register 75:12816-12959.
- Service. 2012. Conservancy fairy shrimp (*Branchinecta* conservation) 5-year review: summary and evaluation. Sacramento Fish and Wildlife Office, Sacramento, California. June 2012. 35 pages.
- Service. 2017. Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 79 pages.
- Service. 2019a. Endangered and threatened wildlife and plants; 12-month findings on petitions to list eight species as endangered or threatened. Final rule. Federal Register 84:41694-41699.

- Service. 2019b. Species status assessment for the tricolored blackbird (*Agelaius tricolor*) version 1.1. February 2019. Sacramento, California.
- Service. 2019c. Revised recovery plan for valley elderberry longhorn beetle. U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. iii + 18 pp.
- Service and Placer County. 2020. Placer County Conservation Program Final Environmental Impact Statement/Environmental Impact Report. May. (ICF 04406.04.) With technical assistance by ICF, San Francisco, CA. 950 pages + appendices.
- Werschkul, D.F. and M.T. Christensen. 1977. Differential Predation by *Lepomis macrochirus* on Eggs and Tadpoles of *Rana*. *Herpetologica* 33:237-241.
- Wright, A.H., and A.A. Wright. 1949. Handbook of frogs and toads of the United States and Canada, third edition. Comstock Publishing Company, Ithaca, NY.
- York, M., D.K. Rosenberg, and K.K. Sturm. 2002. Diet and food-niche breadth of burrowing owls (*Athene cunicularia*) in the Imperial Valley, California. *Western North American Naturalist* 62:280-287.
- Zarn, M. 1974. Burrowing owl (*Speotyto cunicularia hypugaea*). Habitat management series for unique or endangered species. U.S. Bureau of Land Management Technical Note 242. Denver, Colorado. 295 pages.
- Zweifel, R.G. 1955. Ecology, distribution and systematics of frogs of the *Rana boylei* group. *University of California Publications in Zoology* 54:207-292.

APPENDIX A: Species List



United States Department of the Interior



FISH AND WILDLIFE SERVICE
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In Reply Refer To:

May 11, 2020

Consultation Code: 08ESMF00-2020-SLI-1870

Event Code: 08ESMF00-2020-E-05798

Project Name: Western Placer County HCP/NCCP Section 7 Biological Opinion

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-1870

Event Code: 08ESMF00-2020-E-05798

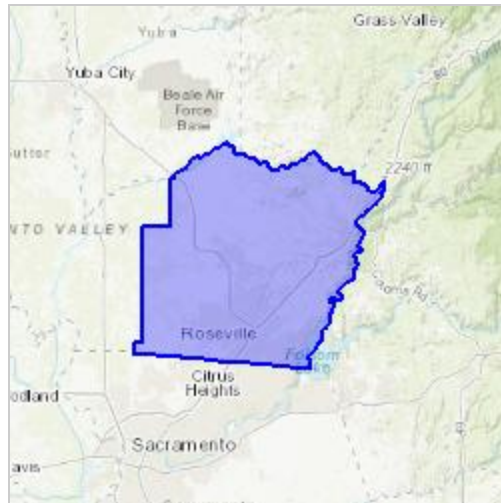
Project Name: Western Placer County HCP/NCCP Section 7 Biological Opinion

Project Type: ** OTHER **

Project Description: Evaluating permit issuance for the Western Placer County HCP/NCCP. The HCP/NCCP covers 14 state and federally listed species that occur in the Plan Area. The HCP/NCCP includes development, infrastructure and maintenance projects for 5 Applicants in accordance with the appropriate local planning documents over a 50-year permit term.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.879748027374404N121.26436351311433W>



Counties: El Dorado, CA | Nevada, CA | Placer, CA | Sacramento, CA | Yuba, CA

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Reptiles

NAME	STATUS
Giant Garter Snake <i>Thamnophis gigas</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle <i>Desmocerus californicus dimorphus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850 Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp <i>Branchinecta conservatio</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
El Dorado Bedstraw <i>Galium californicum ssp. sierrae</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5209	Endangered
Layne's Butterweed <i>Senecio layneae</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4062	Threatened
Pine Hill Ceanothus <i>Ceanothus roderickii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3293	Endangered
Pine Hill Flannelbush <i>Fremontodendron californicum ssp. decumbens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4818	Endangered
Sacramento Orcutt Grass <i>Orcuttia viscida</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5507	Endangered
Stebbins' Morning-glory <i>Calystegia stebbinsii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3991	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> https://ecos.fws.gov/ecp/species/498#crithab	Final

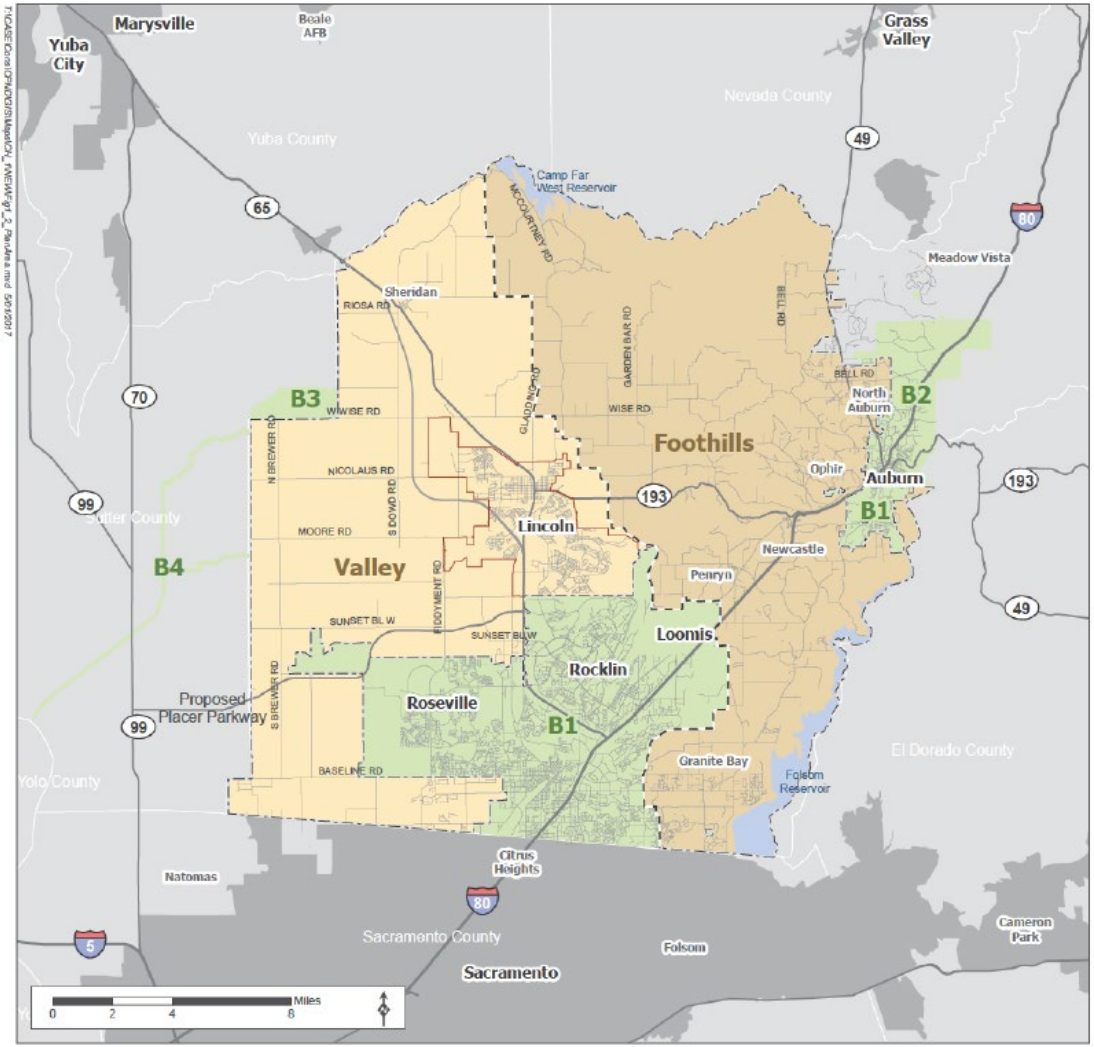
APPENDIX B Species Evaluation

Sacramento Fish and Wildlife Office Intra-Service Section 7 Biological Evaluation Form

I. Project Location

A. County where the project will occur: Placer County

B. Brief description of project area (include map): The project covers approximately 270,000 acres in western Placer County, and a small area in Sutter County. The Action Area also includes the Big Gun Conservation Bank near Michigan Bluff in central Placer County, where mitigation and conservation for California red-legged frog will occur. The Action Area includes two plan areas: Plan Area A, where most development will occur, and Plan Area B, where a few, specific Covered Activities will occur. The figure below shows both Plan Area A and Plan Area B.



II. Species/Critical Habitat

A. Identify the species of concern that are or may be present in the action area and whether federally designated or proposed critical habitat is present within the project area. (Range, Status, Impact, Data).

Common Name	Scientific Name	Federal Status	Species or Habitat within Action Area	Proposed or Designated Critical Habitat Present in Action Area	Species Potentially Affected By Project
California red-legged frog	<i>Rana draytonii</i>	T	Yes	Yes	Yes
California tiger salamander, Central California DPS	<i>Ambystoma californiense</i>	T	Yes	No	No
Delta smelt	<i>Hypomeresus transpacificus</i>	T	No	No	No
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	Yes	No	Yes
Conservancy Fairy Shrimp	<i>Branchinecta conservation</i>	E	Yes	No	Yes
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T	Yes	Yes	Yes
Giant garter snake	<i>Thamnophis gigas</i>	T	Yes	No	Yes
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E	Yes	No	Yes
El Dorado bedstraw	<i>Galium californicum ssp. sierrae</i>	E	No	No	No
Layne's butterweed	<i>Senecio layneae</i>	T	No	No	No
Pine Hill ceanothus	<i>Ceanothus roderickii</i>	E	No	No	No
Pine Hill flannelbush	<i>Fremontodendron californicum ssp. decumbens</i>	E	No	No	No
Sacramento Orcutt grass	<i>Orcuttia viscida</i>	E	No	No	No
Stebbin's morning-glory	<i>Calystegia stebbinsii</i>	E	No	No	No

III. Description of Proposed Action

The Proposed Action is issuance of an incidental take permit for 14 species in western Placer County as a result of development, infrastructure improvements and conservation actions over 50 years. Details of the Covered Activities are described in Chapter 2 of the Western Placer County Habitat Conservation Plan/Natural Community Conservation Plan (Plan or Conservation Plan), and include growth and development projects described in the Placer County and City of Lincoln general plans. For information on the conservation strategy, please see chapters 5 and 6 of the Plan.

IV. Recommended Determination(s) of Effect(s): For all species and critical habitat identified in the action area, mark (X) the appropriate determinations.

X a) “No Effect”. List species for which this recommendation is applicable: Delta smelt, El Dorado bedstraw, Pine Hill ceanothus, and Pine Hill flannelbush.

X b) “May Affect, but is Not Likely to Adversely Affect” (includes beneficial effects). List species for which this recommendation is applicable: California tiger salamander, Layne’s butterweed, Sacramento Orcutt grass, and Stebbin’s morning-glory.

X c) “May Affect, and is Likely to Adversely Affect” (if checked, proceed with biological opinion). List species for which this recommendation is applicable: California red-legged frog, giant garter snake, conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, and valley elderberry longhorn beetle.

IV.a. Reasoning for Effects Determinations

The proposed action will have no effect on four of the species identified in the evaluation. Delta smelt occur downstream of the proposed action in the San Francisco Bay-Delta, and will not be affected by the project. The three other species – El Dorado bedstraw, Pine Hill ceanothus, and Pine Hill flannelbush – only occur on Gabbro soil types on or in the immediate vicinity of Pine Hill, in El Dorado County, California. Gabbro soils have a very limited distribution in the Sierra Nevada foothills, and do not occur in the Action Area.

The proposed action may affect, but is not likely to adversely affect another four species identified in the evaluation. There are no records of California tiger salamander from Placer County and the species is not known to have occurred there, although vernal pool complex habitat is present in the action area (Service 2017 – California tiger salamander recovery plan). The closest extant populations of California tiger salamander are found in western Yolo County and in southeastern Sacramento County, which are separated from the Action Area by the Sacramento and American Rivers, and extensive urban development. Layne’s butterweed are found from Yuba to Tuolumne Counties in serpentine and Gabbro soils, both of which are relatively rare in Placer County and occur outside of the Action Area. One population of Layne’s butterweed is known from Placer County east of the Action Area in Tahoe National Forest. Stebbin’s morning-glory is another species endemic to Gabbro and serpentine soils, and is only known Nevada and El Dorado Counties. Sacramento Orcutt grass is endemic to vernal pools in Sacramento County, and is not known from Placer County.

V. Federally Designated and Proposed Critical Habitat

X a) “No Effect” to Critical Habitat. List critical habitat(s) for which the recommendation is applicable. California tiger salamander, delta smelt, conservancy fairy shrimp, vernal pool tadpole shrimp, and Sacramento Orcutt grass.

X b) “May Affect, but is not likely to Adversely Affect” List critical habitat(s) for which the recommendation is applied. California red-legged frog

X c) “May Affect, and is Likely to Adversely Affect” (if checked, proceed with biological opinion). List critical habitat(s) for which the recommendation is applied. Vernal pool fairy shrimp.

V.a. Reasoning for Effects Determinations

There is only one unit of designated critical habitat that overlaps with the Action Area at Big Gun Conservation Bank. The proposed action will contribute to on-going conservation for the species at the Conservation Bank, and affects will be beneficial for the species and will not appreciably reduce the value of the critical habitat.

VI. Signatures:

Prepared by

Name/Title: Stephanie Jentsch, Senior Biologist

Signature:



Date: December 1, 2020

Reviewed by

Name/Title: Eric Tattersall, Assistant Field Supervisor

Signature:

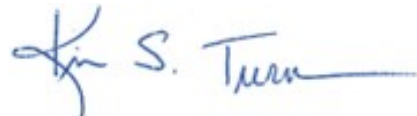


Date: December 1, 2020

Approved by (Acting Field Supervisor)

Name/Title: Kim S. Turner, Acting Field Supervisor

Signature:



Date: December 1, 2020